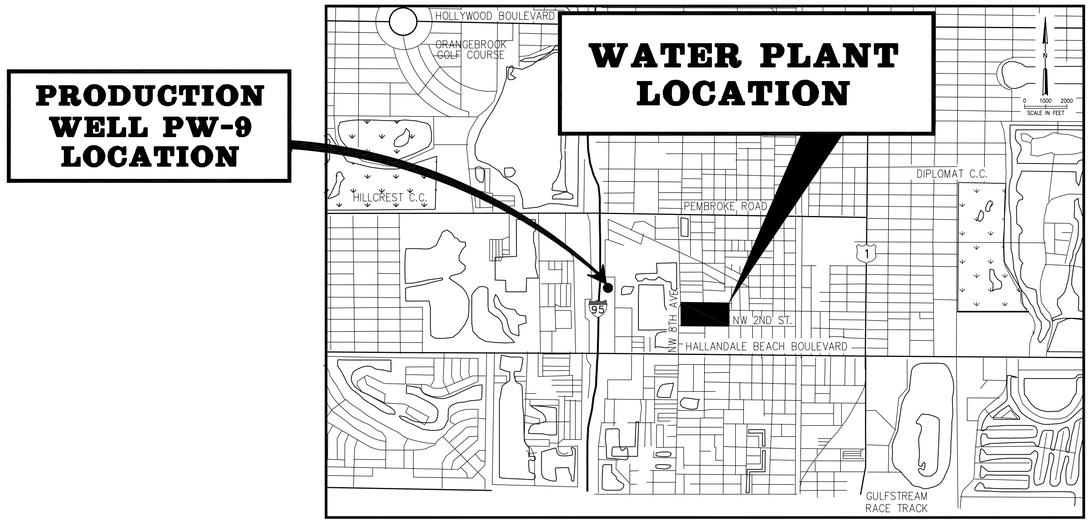
CITY OF HALLANDALE BEACH

PRODUCTION WELL PW-9



LOCATION MAP

BID SET
FEBRUARY 2020

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 16:54:10-05'00'

TITLE SHEET AND LOCATION MAP
SHEET 1 OF 42
DRAWING No. G-01

BID SET

PLOT DATE: 2/5/2020 9:08 AM BY: TBOCAS
XREFs=
File = C:\bms\hazen-pw\dms49211\40612-030BP4-G01 Saved by tbocas Save date = 1/21/2020 2:29 PM

LIST OF DRAWINGS

Sheet Number	Sheet Title	Sheet Description
		GENERAL
1	G-01	TITLE SHEET AND LOCATION MAP
2	G-02	LIST OF DRAWINGS AND GENERAL NOTES
3	G-03	ABBREVATIONS, SIMBOLS AND LEGEND
		CIVIL
4	C-01	STAGING PLAN
5	C-02	ENLARGED STAGING PLAN
6	C-03	EXISTING SITE PLAN
7	C-04	PROPOSED SITE PLAN
8	C-05	PROPOSED SANITARY SEWER REPLACEMENT PLAN
9	C-06	PROPOSED SANITARY SEWER PLAN AND PROFILE
10	C-07	ENLARGED SITE PLAN
11	C-08	SIDEWALK RELOCATION PLAN
12	C-09	DEVELOPMENT WATER DISPOSAL PLAN
13	C-10	CIVIL DETAILS – SHEET 1
14	C-11	CIVIL DETAILS – SHEET 2
15	C-12	CIVIL DETAILS – SHEET 3
16	C-13	CIVIL DETAILS – SHEET 4
		MECHANICAL
17	M-01	WELLHEAD TOP PLAN
18	M-02	WELLHEAD SECTION
19	M-03	MECHANICAL DETAILS – SHEET 1
20	M-04	MECHANICAL DETAILS – SHEET 2
21	M-05	MECHANICAL DETAILS – SHEET 3
		STRUCTURAL
22	S-01	WELLHEAD FOUNDATION PLAN
23	S-02	WELLHEAD TOP PLAN
24	S-03	WELLHEAD SECTION
25	S-04	FENCE PLAN, SECTION AND DETAILS
26	S-05	STRUCTURAL DETAILS – SHEET 1
27	S-06	STRUCTURAL DETAILS – SHEET 2
28	S-07	STRUCTURAL DETAILS – SHEET 3
		ELECTRICAL
29	E-01	ELECTRICAL LEGEND AND SYMBOLS
30	E-02	ELECTRICAL NOTES
31	E-03	PROPOSED ELECTRICAL SITE PLAN
32	E-04	POWER, LIGHTING AND GROUNDING PLAN
33	E-05	ONE-LINE DIAGRAM
34	E-06	SCHEMATICS AND RISERS
35	E-07	ELECTRICAL DETAILS – SHEET 1
36	E-08	ELECTRICAL DETAILS – SHEET 2
37	E-09	ELECTRICAL DETAILS – SHEET 3
		INSTRUMENTATION
38	I-01	SYMBOLS AND LEGEND
39	I-02	SYSTEM BLOCK DIAGRAM
40	I-03	WELL PW-9
41	I-04	DETAILS – SHEET 1
42	I-05	DETAILS – SHEET 2

GENERAL NOTES

1. LOCATION, SIZE, MATERIAL, ALIGNMENT AND ELEVATIONS OF EXISTING FACILITIES HAVE BEEN DETERMINED FROM AVAILABLE RECORDS. THIS INFORMATION IS FURNISHED AS A GUIDE FOR THE CONTRACTOR. THE ENGINEER AND THE OWNER DO NOT GUARANTEE THE ACCURACY OF THESE DATA. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR DETERMINING THE LOCATION AND PROTECTING ALL TYPES OF UTILITIES AND STRUCTURES ENCOUNTERED DURING THE COURSE OF OPERATION ON THIS PROJECT.
2. THE CONTRACTOR IS REQUIRED TO OBTAIN WRITTEN APPROVAL FROM THE ENGINEER FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
3. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY REQUIRED PLAN DEVIATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A DEWATERING PERMIT FROM THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT IF REQUIRED.
5. RESTRAINED JOINT PIPE SHALL BE USED FOR ALL PIPING ON THIS PROJECT. THRUST BLOCKS SHALL NOT BE PERMITTED.
6. CONTRACTOR SHALL PROVIDE A MINIMUM VERTICAL CLEARANCE OF 6" BETWEEN ALL LINES THAT CROSS. CROSSINGS WITH POTABLE WATER LINES SHALL BE AS SHOWN ON THE DRAWINGS.
7. THE CONTRACTOR SHALL RECORD ELEVATIONS OF EXISTING BURIED UTILITIES AT ALL ENCOUNTERED CROSSINGS WITH NEW WORK.
8. ALL CONNECTIONS TO EXISTING PIPING SHALL BE MADE UNDER THE DIRECTION OF THE CITY.
9. MINIMUM DEPTH OF COVER FOR ALL UNDERGROUND PIPING SHALL BE 36" EXCEPT WHERE SHOWN OTHERWISE ON PLANS.
10. PIPE DEFLECTION SHALL NOT EXCEED 75% OF THE MAXIMUM DEFLECTION RECOMMENDED BY THE MANUFACTURER.
11. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION AND UNTIL ACCEPTANCE OF THE WORK FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES FROM DAMAGE OR DISRUPTION OF SERVICE.
12. THE CONTRACTOR SHALL ADJUST TO FINAL GRADE ALL EXISTING UTILITY CASTINGS INCLUDING VALVE BOXES, MANHOLES, HAND HOLES, PULL BOXES, INLETS AND SIMILAR STRUCTURES IN CONSTRUCTION AREA TO BE OVERLAID WITH ASPHALT.
13. EXISTING BURIED PIPE AND CONDUIT 2" DIAMETER AND SMALLER IS NOT NECESSARILY SHOWN. ELECTRICAL AND INSTRUMENTATION DUCT BANKS NOT SHOWN. WHEN EXCAVATING, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO UNDERGROUND UTILITIES.
14. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO VERIFY LOCATIONS AND ELEVATIONS OF UNDERGROUND UTILITIES THAT MAY INTERFERE WITH THE WORK. THE NUMBER OF EXPLORATORY EXCAVATIONS SHALL BE SUFFICIENT TO DETERMINE ALIGNMENT, LOCATION AND ELEVATION.
15. THE WORK TO BE PERFORMED UNDER THESE CONTRACT DOCUMENTS IS AT A PERMITTED WATER SUPPLY WELLFIELD. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE SPECIFICATIONS, REGULATORY AGENCIES, AND FACILITY OPERATIONS STAFF AT ALL TIMES.

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL PREPARE, OBTAIN APPROVAL OF AND IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN PER THE SPECIFICATION TITLED "TEMPORARY EROSION AND SEDIMENT CONTROL".
2. CONTRACTOR SHALL EMPLOY BEST MANAGEMENT PRACTICES THROUGHOUT CONSTRUCTION IN ORDER TO ENSURE POLLUTION PREVENTION. CONTRACTOR SHALL COMPLY WITH ALL LOCAL STATE AND OTHER GOVERNMENTAL ENVIRONMENTAL REGULATIONS THROUGHOUT CONSTRUCTION.
3. DURING CONSTRUCTION ALL CATCH BASINS TO BE EQUIPPED WITH FILTER FABRIC AND HAY BALES OVER GRATES.
4. SILT FENCES SHALL BE INSTALLED AS NECESSARY TO CONTROL OR PREVENT DISCHARGE OF SEDIMENT ONTO ADJACENT UNDISTURBED AREAS, OR OFF-SITE AREAS.
5. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE STABILIZED WITHIN A REASONABLE PERIOD OF TIME TO ASSURE MINIMUM EROSION OF SOILS.
6. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
7. ALL EXPOSED AREAS SHALL BE SODDED AS SPECIFIED WITHIN 30 DAYS OF FINAL GRADING.
8. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.
9. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.
10. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
11. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY CITY, COUNTY, AND STATE OF FLORIDA ON SITE INSPECTION, AT NO ADDITIONAL COST TO THE OWNER.
12. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES.
13. IF INSTALLATION OF STORM DRAINAGE SYSTEM (WHERE SHOWN ON THE DRAWINGS) SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
14. ALL EXISTING STRUCTURES, FENCING, TREES, AND ETC. SHOW TO BE REMOVED ON THE DEMOLITION DRAWINGS SHALL BE REMOVED AND DISPOSED OF OFF SITE. BURNING WILL NOT BE ALLOWED ON-SITE.
15. CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
16. CONTRACTOR IS TO PROVIDE EROSION CONTROL/SEDIMENTATION BARRIER (HAY BALES OR SILTATION CURTAIN) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS AND WATER WAYS. IN ADDITION CONTRACTOR SHALL PLACE STRAW, MULCH OR OTHER SUITABLE MATERIAL ON GROUND IN AREAS WHERE CONSTRUCTION RELATED TRAFFIC IS TO ENTER AND EXIT SITE IF IN THE OPINION OF THE ENGINEER AND/OR LOCAL AUTHORITIES IF EXCESSIVE QUANTITIES OF EARTH ARE TRANSPORTED OFF-SITE EITHER BY NATURAL DRAINAGE OR BY VEHICULAR TRAFFIC. THE CONTRACTOR IS TO REMOVE AND CLEAN SAID EARTH TO THE SATISFACTION OF THE ENGINEER AND/OR AUTHORITIES. EROSION CONTROL BARRIER SHALL BE ESTABLISHED AS THE FIRST ITEM OF WORK.

PROPERTY AND FLOOD NOTES

PROPERTY INFO:

FOLIO No.: 514221010111

ADDRESS:

ANSIN BLVD.
HALLANDALE BEACH, FL 33009

LOCATION INFO:

TOWNSHIP: 51S
RANGE: 42E
SECTION: 21
LATITUDE: N25° 59' 24"
LONGITUDE: W80° 09' 55"

FLOOD INFO:

100 YEAR FLOOD ELEVATION: 6.0' (NAVD 1988)
SOURCE: FLOOD INSURANCE RATE MAP No. 12011C0731H
(EFFECTIVE AUGUST 18, 2014)

GENERAL NOTES - TRAFFIC CONTROL PLAN

1. THE TRAFFIC CONTROL PLANS FOR THE PROJECT SHALL COMPLY WITH THE LATEST EDITION OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, INDEX NO. 600-660. MUTCD AND THE STANDARD SPECIFICATIONS. THE CONTRACTOR'S RESPONSE TIME TO ALL REPORTED MALFUNCTIONS OF TRAFFIC SIGNALS WITHIN THE PROJECT LIMITS SHALL BE NO MORE THAN TWO (2) HOURS AND SHALL RESTORE ALL MALFUNCTIONING TRAFFIC SIGNAL EQUIPMENT TO ITS LEVEL OF OPERATION PRIOR TO THE MALFUNCTIONING WITHIN TWENTY-FOUR (24) HOURS. DURING THIS TIME THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE TEMPORARY TRAFFIC CONTROL DEVICES, FLAGGLER PERSONNEL AND LAW ENFORCEMENT PERSONNEL AS NECESSARY TO MAINTAIN A SAFE AND EFFICIENT FLOW OF TRAFFIC AT THE AFFECTED WORK ZONE. THE AGENCY WITH JURISDICTION SHALL APPROVE ALL MODIFICATIONS.
2. THE CONTRACTOR SHALL MAINTAIN PROPER OPERATION OF ALL TRAFFIC SIGNAL LOOP ASSEMBLIES AND LOOP DETECTORS WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL CORRECT ALL LOOP ASSEMBLY/DETECTOR MALFUNCTIONS WITHIN 24 HOURS OF NOTIFICATION OF SUCH MALFUNCTIONS BY THE ENGINEER.
3. THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY.
4. A REGULATORY SPEED OF 25 MPH SHALL BE POSTED WITHIN THE LIMITS OF THE WORK ZONE.
5. EXISTING SIGNS AND PAVEMENT MARKINGS THAT CONFLICT WITH CONSTRUCTION SIGNS AND MARKINGS SHALL BE REMOVED DURING CONSTRUCTION. ALL EXISTING SIGNS THAT ARE REMOVED SHALL BE STOCKPILED IN A SECURE PLACE AND REINSTALLED AFTER CONSTRUCTION. REMOVE AND REPLACE ANY GROUND MOUNT SIGN BY USE OF INDEX NO. 611.
6. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE PATTERNS AND PREVENT ADVERSE FLOODING OF THE TRAVEL LANES DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE CITY OF HALLANDALE BEACH FOR ANY AND ALL CONSTRUCTION ACTIVITIES TO BE PERFORMED AT NIGHT. NO LANE CLOSURE SHALL BE ALLOWED BETWEEN THE HOURS OF 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM, MONDAY THROUGH FRIDAY UNLESS APPROVED BY THE ENGINEER.
8. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY TWO (2) BUSINESS DAYS IN ADVANCE OF ANY EXCAVATION INVOLVING ITS UTILITIES SO THAT A COMPANY REPRESENTATIVE CAN BE PRESENT. THE LOCATION OF THE UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION.
9. TRAFFIC CONTROL ON ALL COUNTY RIGHTS-OF-WAY SHALL MEET THE ADDITIONAL REQUIREMENTS OF THE COUNTY ENGINEERING DEPARTMENT.
10. CONTRACTOR SHALL PREPARE AND SUBMIT MAINTENANCE OF TRAFFIC PLAN (MOT) WHERE REQUIRED BY FEDERAL, STATE, COUNTY, OR LOCAL AGENCIES HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED APPROVALS AND PERMITS ASSOCIATED WITH THE MOT'S. ALL MOT'S TO BE ATS CERTIFIED.
11. THE CONTRACTOR SHALL ALSO COORDINATE THE CONSTRUCTION SCHEDULE WITH ALL AGENCIES WITH JURISDICTION TO AVOID LANE CLOSURES WHICH WOULD ADVERSELY AFFECT TRAFFIC DURING RUSH HOUR.

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:04:34-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-G02

Hallandale Beach PROSPERS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
LIST OF DRAWINGS AND GENERAL NOTES

DATE: FEBRUARY 2020
SHEET: 2 OF 42
DRAWING: G-02

BID SET

PLOT DATE: 2/5/2020 9:08 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49211\40612-030BP4-G02 Saved by tbocas Save date = 1/22/2020 4:35 PM

SYMBOLS

- SOLENOID
- MOTOR OPERATED
- BALL VALVE
- BUTTERFLY VALVE/DAMPER
- CHECK VALVE
- GATE VALVE
- PLUG VALVE
- THREE WAY VALVE
- PRESSURE REDUCING/ RELIEF VALVE
- PRESSURE REGULATING VALVE
- VENTURI METER
- FLAME ARRESTER
- HOSE BIBB (PLAN)
- HOSE BIBB (ELEVATION)
- MECHANICAL COUPLING
- HARNESSED MECHANICAL COUPLING
- GROOVED COUPLING
- HARNESSED EXPANSION JOINT
- EXPANSION JOINT
- GAUGE
- UNION
- MAGNETIC METER
- VENTURI METER
- FIRE HYDRANT
- MANHOLE
- SEALED MANHOLE
- PROPOSED PIPELINE/STRUCTURE
- EXISTING UTILITIES/STRUCTURE
- PROPOSED PIPELINE (DOUBLE LINE IF SCALE OF DRAWING PERMITS)
- WELDED JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- SOCKET WELDED JOINT
- PROPOSED STRUCTURE OR FACILITY
- REDUCER (SINGLE LINE)
- REDUCER (DOUBLE LINE)
- CONCRETE PIPE SUPPORT

ABBREVIATIONS

VALVES, FITTINGS, ETC.

ARV	AIR RELIEF VALVE
BV	BALL VALVE
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
CGV	CHLORINE GAS VALVE UNDER VACUUM
CV	CHECK VALVE
CPLG	COUPLING
ED	EQUIPMENT DRAIN
EXP JT	EXPANSION JOINT
FH	FIRE HYDRANT
FTG	FITTING
FLG	FLANGE
FD	FLOOR DRAIN
GV	GATE VALVE
HB	HOSE BIBB
LR	LONG RADIUS
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
NPT	NATIONAL PIPE THREAD
PE	PLAIN END
PV	PLUG VALVE
PS	PUMP STATION
PRV	PRESSURE RELIEF VALVE
RD	ROOF DRAIN
SOV	SOLENOID OPERATED VALVE
THD	THREADED
VAC	VACUUM

PIPING

CU	COPPER OR CUBIC
DIP	DUCTILE IRON PIPE
FM	FORCE MAIN
GSP	GALVANIZED STEEL PIPE
IPS	IRON PIPE SIZE
PVC	POLYVINYLCHLORIDE
PCCP	PRECAST CONCRETE CYLINDER PIPE
RCP	REINFORCED CONCRETE PIPE

GENERAL

A/C	AIR CONDITIONER
AL, ALUM	ALUMINUM
APPROX	APPROXIMATE
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL
AS	ANTISCALANT
BD	BLOWDOWN
BLK	BLOCK
BOTT	BOTTOM
BP	BID PACKAGE
BLDG	BUILDING
BSP	BACTERIOLOGICAL SAMPLING POINT
BWD	BACKWASH DRAIN
CB	CATCH BASIN
CA	SODIUM HYDROXIDE (CAUSTIC)
CC	CENTER TO CENTER
CHK'D	CHECKERED
CL	CENTER LINE
CLG	CHLORINE GAS
CLS	CHLORINE SOLUTION
CO	CLEAN OUT
CN	CONCENTRATE WATER
CLGV	CHLORINE GAS – VACUUM
CLR	CLEAR
COL	COLUMN
CO	COMPANY
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CSD	CLEANING SOLUTION DRAIN
CSR	CLEANING SOLUTION RETURN
CS	CHLORINE SOLUTION
CSS	CLEANING SOLUTION SUPPLY
CW	CONDITIONED WATER
D	DRAIN
DET	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DWL	DOWEL
DN	DOWN
DWG	DRAWING
EA	EACH
EE	EACH END
EF	EACH FACE
EW	EACH WAY
ECC	ECCENTRIC
EFF	EFFLUENT
ELEC	ELECTRIC
EL, ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
EXH	EXHAUST
EXIST, EX	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FIN	FINISH
FE	FIRE EXTINGUISHER
FL	FLOOR
FF	FINISH FLOOR
FLG	FLANGED
FM	FORCE MAIN
FR	FUEL RETURN
FS	FUEL SUPPLY
FSS	FLUSHING SOLUTION SUPPLY
FTG	FOOTING
FW	FINISHED WATER
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HP	HIGH POINT
HWL	HIGH WATER LEVEL
HORIZ	HORIZONTAL
HWH	HOT WATER HEATER
INFL	INFLUENT
INJ	INJECTION
ID	INSIDE DIAMETER
INSUL	INSULATION
INV	INVERT
JT	JOINT
LG	LONG
LN	LINE
LP	LOW POINT
LWL	LOW WATER LEVEL
MH	MANHOLE
MANUF	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MO	MASONRY OPENING
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
NAVD	NORTH AMERICAN VERTICAL DATUM
NF	NANOFILTRATION
NPW	NON POTABLE WATER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
OC	ON CENTER
OPNG	OPENING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OF	OVERFLOW
ORP	OXIDATION REDUCTION POTENTIAL
PCSR	PERMEATE CLEANING SOLUTION RETURN
PM	PERMEATE WATER
PW	POTABLE WATER
LBS/FT	POUNDS PER FOOT
P/L	PROPERTY LINE
RAD, R	RADIUS
RECIR	RECIRCULATION
RED	REDUCING
REHAB	REHABILITATION
REINF	REINFORCING
REQ'D	REQUIRED
RJ	RESTRAINED JOINT
RO	REVERSE OSMOSIS
ROT	ROTATED
R/W, ROW	RIGHT OF WAY
RW	RAW WATER
S	SAMPLE
SAN	SANITARY
SA	SULFURIC ACID
SECT	SECTION
SEQ	SEQUESTRANT
SH	SODIUM HYPOCHLORITE
SHT	SHEET
SI	SCALE INHIBITOR
SL	SLUDGE
SOF	SOFTENED WATER
SPD	SUMP PUMP DISCHARGE
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
STL	STEEL
STRUC	STRUCTURAL
SYMM	SYMMETRICAL
TBD	TO BE DETERMINED
TEMP	TEMPORARY
THK	THICK
TI	TEMPERATURE INDICATOR
TOC	TOP OF CONCRETE
TOS	TOP OF SLAB
TYP	TYPICAL
VTR	VENT THROUGH ROOF
VERT	VERTICAL
WTR	WATER
W/L	WATER LEVEL
WWF	WELDED WIRE FABRIC
W/	WITH

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

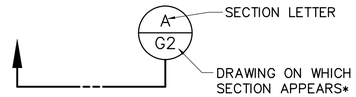
This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:04:38-05'00'

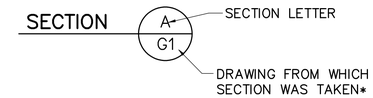
SECTION AND DETAIL IDENTIFICATION

SECTION IDENTIFICATION

(1) SECTION CUT ON DRAWING G–1:

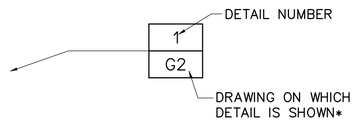


(2) ON DRAWING G–2 THIS SECTION IS IDENTIFIED AS:

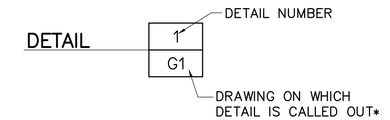


DETAIL IDENTIFICATION

(1) DETAIL CALL–OUT ON DRAWING G–1 AS:

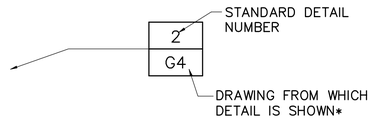


(2) ON DRAWING G–2 THIS DETAIL IDENTIFIED AS:

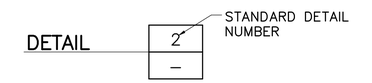


STANDARD DETAIL IDENTIFICATION

(1) DETAIL CALL–OUT ON PLAN OR SECTION:



(2) ON DRAWING G–4 THIS DETAIL IDENTIFIED AS:



NOTE: IF PLAN AND SECTION (OR DETAIL CALL–OUT AND DETAIL) ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACE BY A LINE.

NOTES:

1. ELECTRICAL SYMBOLS SHOWN ON ELECTRICAL SHEETS.
2. FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS. SEE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–G03

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

ABBREVATIONS, SIMBOLS AND LEGEND

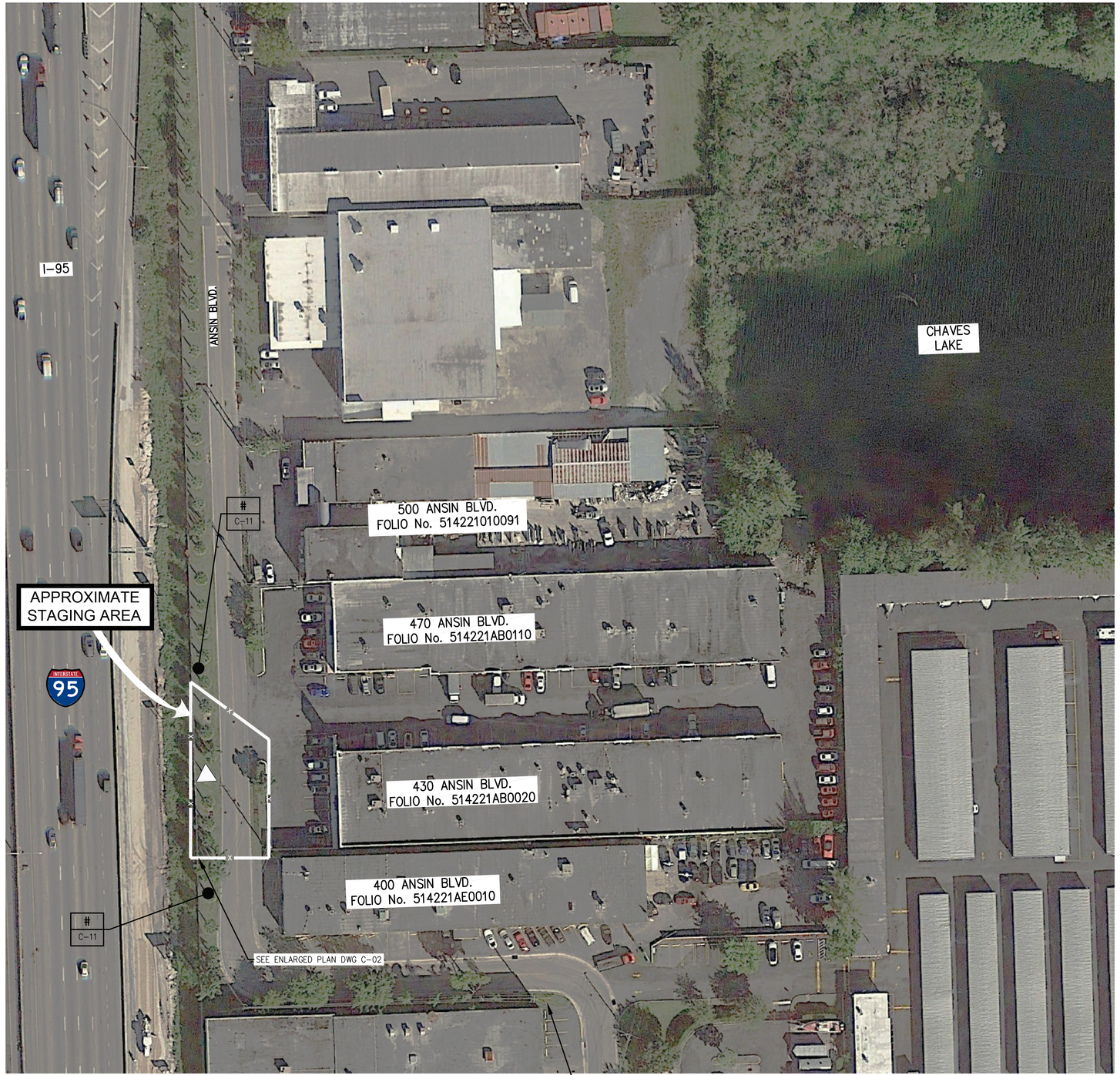
DATE: FEBRUARY 2020
SHEET: 3 OF 42
DRAWING: G–03

BID SET

PLOT DATE: 2/5/2020 9:08 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49211\40612–030BP4–G03 Saved by tbocas Save date = 2/4/2020 1:54 PM



N

GENERAL NOTES:

1. THE SIZE AND LAYOUT OF THE CONSTRUCTION STAGING AREA SHOWN IS FOR CONCEPTUAL PURPOSES. THE ACTUAL SIZE AND LAYOUT OF THE STAGING AREA SHALL BE DESIGNED BY THE CONTRACTOR.
2. ADDITIONAL STAGING AREA AT THE OWNER'S "SLUDGE HANDLING AREA" IS AVAILABLE WITHIN 1 MILE OF THE WELL SITE ON THE NORTH SIDE OF CHAVES LAKE.
3. STAGING AREA SHALL BE WITHIN 50' RIGHT-OF-WAY OF ANSIN BOULEVARD.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING THE STAGING AREA TO ITS ORIGINAL CONDITION (FURNISH AND INSTALL GRADING, SOD, LANDSCAPING, ASPHALT PAVEMEN, ETC.) AT THE END OF CONSTRUCTION AND PRIOR TO FINAL INSPECTION AND ACCEPTANCE BY THE OWNER.
5. SUCH DAMAGE INCLUDES BUT IS NOT LIMITED TO CRACKING AND RUTTING OF PAVED SURFACES AND CURBS, DIRT AND DEBRIS, DAMAGE TO PAVEMENT MARKINGS OR COMPACTION OF LANDSCAPE AREAS.

LEGEND:

APPROXIMATE LOCATION OF PROPOSED PRODUCTION WELL PW-9

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:04:43-05'00'

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-C01

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

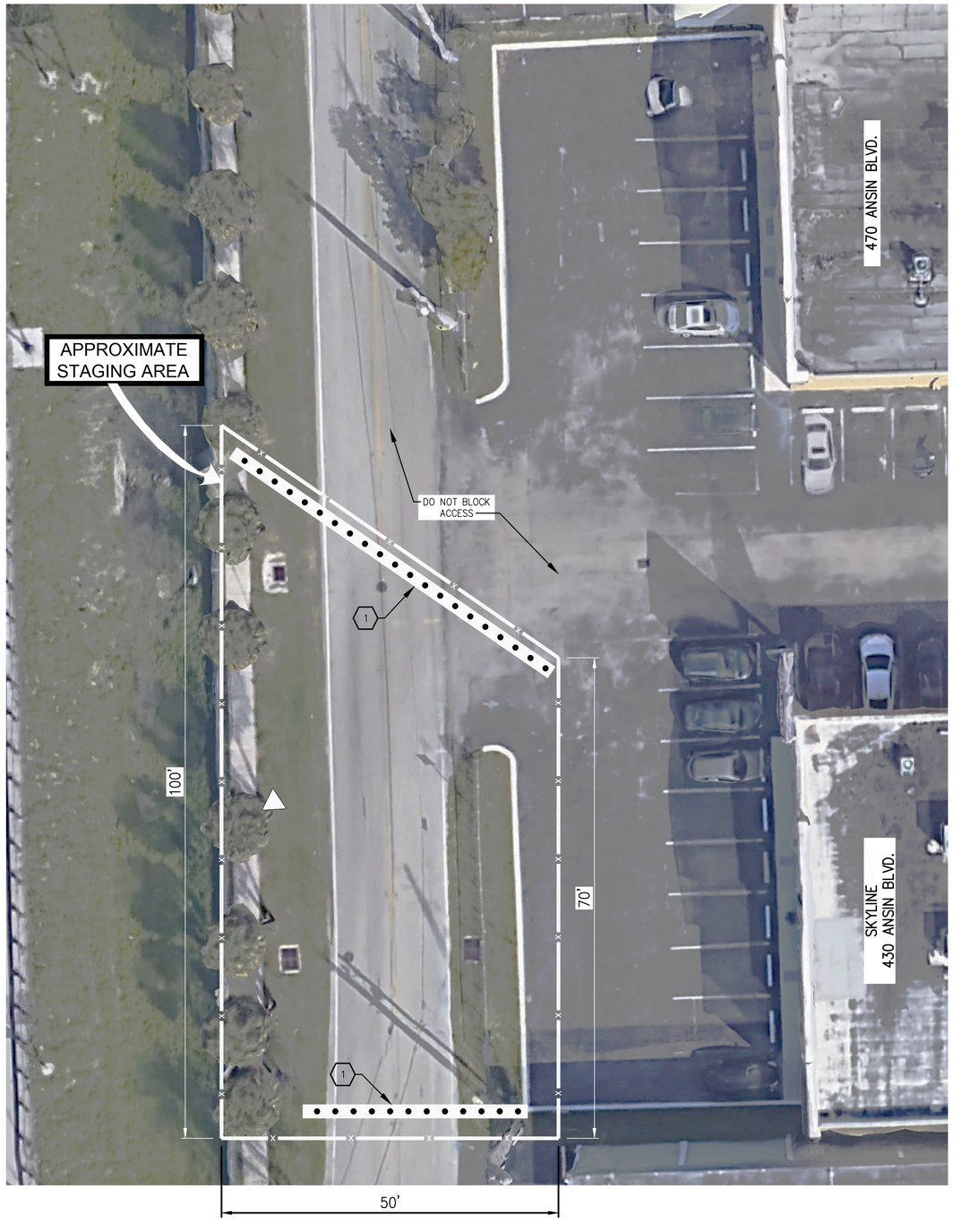
STAGING PLAN

DATE: FEBRUARY 2020
SHEET: 4 OF 42
DRAWING: C-01

BID SET

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\SP-ST-X

File = C:\bms\hazen-pw\dms49209\40612-030BP4-C01 Saved by tbocas Save date = 12/12/2019 10:38 AM



N

GENERAL NOTES:

1. THE SIZE AND LAYOUT OF THE CONSTRUCTION STAGING AREA LIMITS SHOWN IS FOR CONCEPTUAL PURPOSES. THE ACTUAL SIZE AND LAYOUT OF THE STAGING AREA SHALL BE DESIGNED BY THE CONTRACTOR.
2. ADDITIONAL STAGING AREA AT THE OWNER'S "SLUDGE HANDLING AREA" IS AVAILABLE WITHIN 1 MILE OF THE WELL SITE ON THE NORTH SIDE OF CHAVES LAKE.
3. STAGING AREA SHALL BE WITHIN 50' RIGHT-OF-WAY OF ANSIN BOULEVARD.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING THE STAGING AREA TO ITS ORIGINAL CONDITION (FURNISH AND INSTALL GRADING, SOD, LANDSCAPING, ASPHALT PAVEMEN, ETC.) AT THE END OF CONSTRUCTION AND PRIOR TO FINAL INSPECTION AND ACCEPTANCE BY THE OWNER.
5. SUCH DAMAGE INCLUDES BUT IS NOT LIMITED TO CRACKING AND RUTTING OF PAVED SURFACES AND CURBS, DIRT AND DEBRIS, DAMAGE TO PAVEMENT MARKINGS OR COMPACTION OF LANDSCAPE AREAS.

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

KEYED NOTE:

1 FURNISH AND INSTALL PLASTIC WATER FILLED BARRIER.

LEGEND:

APPROXIMATE LOCATION OF PROPOSED WELL PRODUCTION PW-9

PHOTO # | DWG # ARROW INDICATES DIRECTION AND POINT OF VIEW OF PHOTO

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:04:48-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C02

Hallandale Beach PROUD TO. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ENLARGED STAGING PLAN

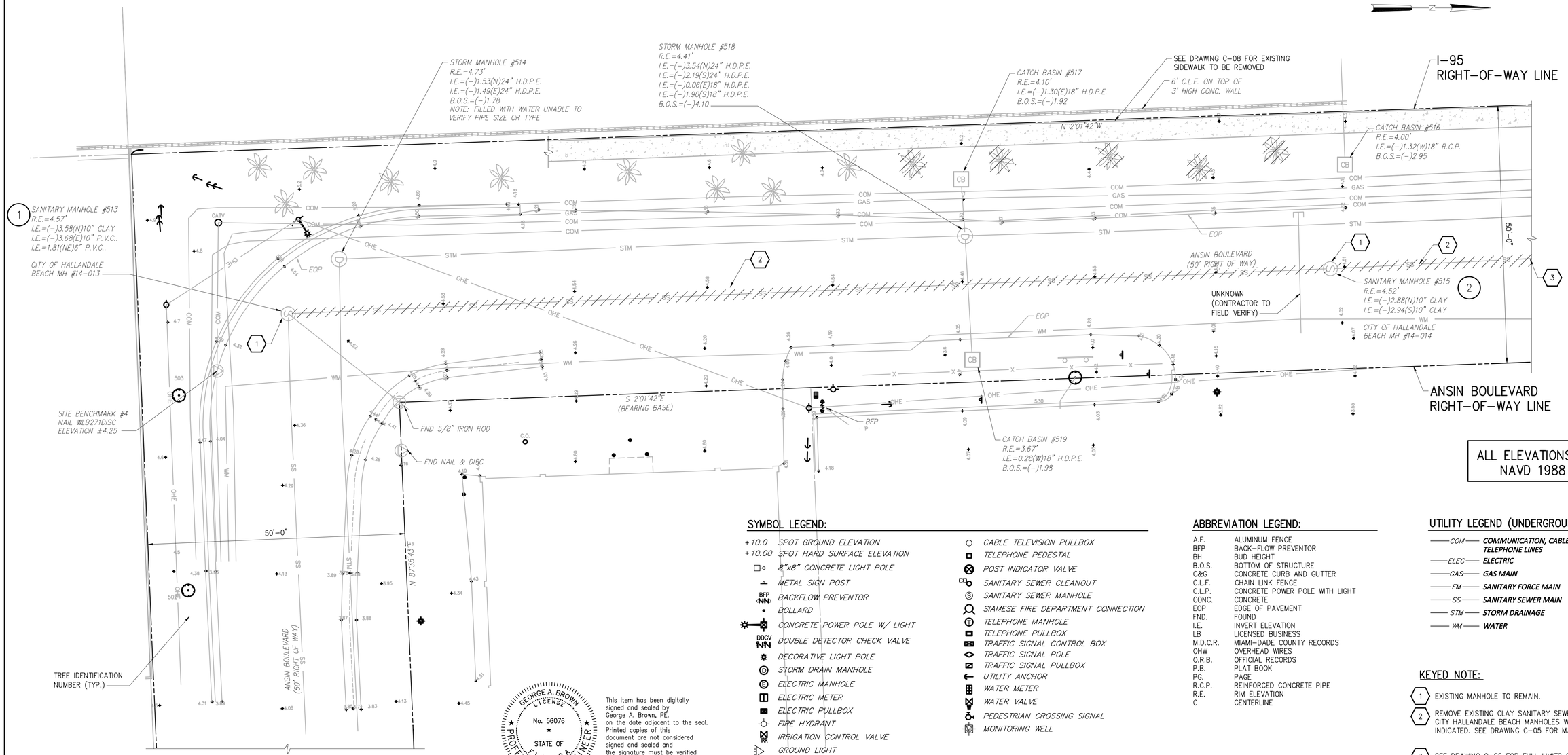
DATE : FEBRUARY 2020
SHEET : 5 OF 42
DRAWING : C-02

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49209\40612-030BP4-C02 Saved by MNiemiec Save date = 12/12/2019 10:38 AM



ALL ELEVATIONS IN NAVD 1988

SYMBOL LEGEND:

- + 10.0 SPOT GROUND ELEVATION
- + 10.00 SPOT HARD SURFACE ELEVATION
- 8"x8" CONCRETE LIGHT POLE
- METAL SIGN POST
- BFP (NN) BACKFLOW PREVENTOR
- BOLLARD
- CONCRETE POWER POLE W/ LIGHT
- DDCV (NN) DOUBLE DETECTOR CHECK VALVE
- DECORATIVE LIGHT POLE
- STORM DRAIN MANHOLE
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PULLBOX
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- GROUND LIGHT
- SHADE TREE
- PALM TREE
- CABLE TELEVISION PULLBOX
- TELEPHONE PEDESTAL
- POST INDICATOR VALVE
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- SIAMESE FIRE DEPARTMENT CONNECTION
- TELEPHONE MANHOLE
- TELEPHONE PULLBOX
- TRAFFIC SIGNAL CONTROL BOX
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL PULLBOX
- UTILITY ANCHOR
- WATER METER
- WATER VALVE
- PEDESTRIAN CROSSING SIGNAL
- MONITORING WELL

ABBREVIATION LEGEND:

A.F.	ALUMINUM FENCE
BFP	BACK-FLOW PREVENTOR
BH	BUD HEIGHT
B.O.S.	BOTTOM OF STRUCTURE
C&G	CONCRETE CURB AND GUTTER
C.L.F.	CHAIN LINK FENCE
C.L.P.	CONCRETE POWER POLE WITH LIGHT
CONC.	CONCRETE
EOP	EDGE OF PAVEMENT
FND.	FOUND
I.E.	INVERT ELEVATION
LB	LICENSED BUSINESS
M.D.C.R.	MIAMI-DADE COUNTY RECORDS
OHW	OVERHEAD WIRES
O.R.B.	OFFICIAL RECORDS
P.B.	PLAT BOOK
PG.	PAGE
R.C.P.	REINFORCED CONCRETE PIPE
R.E.	RIM ELEVATION
C	CENTERLINE

UTILITY LEGEND (UNDERGROUND):

- COM — COMMUNICATION, CABLE TELEVISION TELEPHONE LINES
- ELEC — ELECTRIC
- GAS — GAS MAIN
- FM — SANITARY FORCE MAIN
- SS — SANITARY SEWER MAIN
- STM — STORM DRAINAGE
- WM — WATER

KEYED NOTE:

1. EXISTING MANHOLE TO REMAIN.
2. REMOVE EXISTING CLAY SANITARY SEWER BETWEEN CITY HALLANDALE BEACH MANHOLES WHERE INDICATED. SEE DRAWING C-05 FOR MANHOLE (3)
3. SEE DRAWING C-05 FOR FULL LIMITS OF SANITARY SEWER REMOVAL.

LEGEND:

- EXISTING
- TO BE RELOCATED

1"=10'-0" (10 5 0 10')

KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.
2. THE ABOVE NOTICE SHALL APPEAR ON THE COVER SHEET OF ALL CONSTRUCTION PLANS SUBMITTED TO THE COUNTY.

UTILITY LOCATES

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:04:53-05'00'

MANHOLE SCHEDULE

MARK	CITY OF HALLANDALE BEACH SANITARY MANHOLE NUMBER	MANHOLE NUMBER FROM CRAVEN THOMPSON SURVEY
(1)	14-013	# 513
(2)	14-014	# 515
(3)	14-015	NOT APPLICABLE

SCHEDULE OF TREES TO BE RELOCATED

TREE ID No.	TREE TYPE	CALIPER	BUD HEIGHT
673	SABAL PALM	10"	24'
674	SABAL PALM	10"	20'
675	SABAL PALM	12"	22'
676	SABAL PALM	10"	26'
077	SABAL PALM	12"	26'

NOTE:

1. TREES TO BE RELOCATED ABOUT 1,000 FEET NORTH IN THE SWALE AT LOCATIONS SELECTED BY THE OWNER.

NOTE:

1. THIS DRAWINGS IS BASED ON THE TOPOGRAPHIC SURVEY PREPARED BY CRAVEN THOMPSON AND ASSOCIATES INC. PROJECT No. 14-0063-001-01.
2. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND REFERENCED TO NATIONAL GEODETIC SURVEY (NGS) BENCHMARK PID #AC4695, NGS BRASS DISC STAMPED "MORRIS No. 4", SET IN CONCRETE SIDEWALK ALONG WEST SIDE OF A PARKING LOT152' WEST OF THE CENTERLINE OF NW 9 AVENUE, SOUTHEAST OF THE SOUTHEAST CORNER OF HALLANDALE HIGH SCHOOL. ELEVATION = 8.72.

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C03

Hallandale Beach PROSPEROUS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

EXISTING SITE PLAN

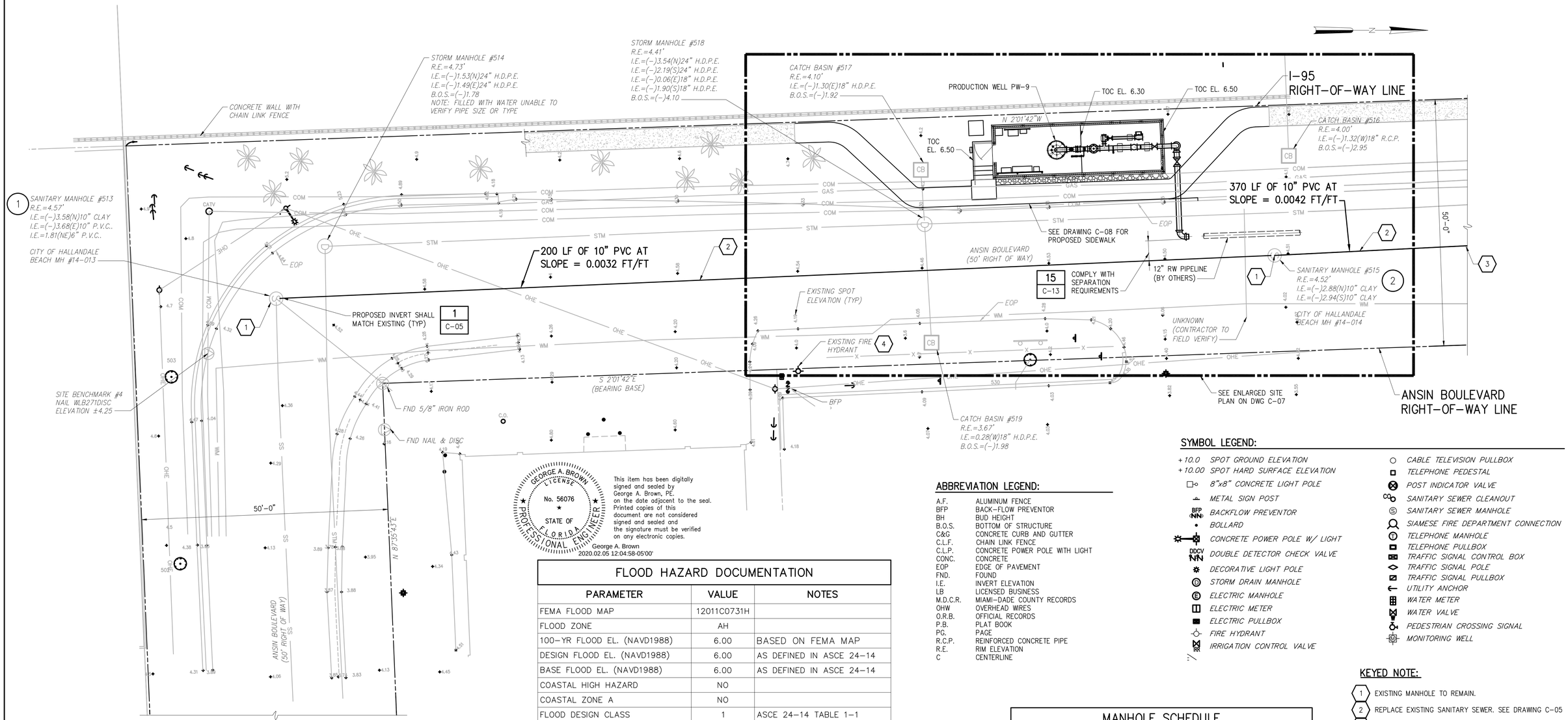
DATE: FEBRUARY 2020
SHEET: 6 OF 42
DRAWING: C-03

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\SP-ST-X

File = C:\pms\hazen-pw\dms49209\40612-030BP4-C03 Saved by tbocas Save date = 12/13/2019 10:34 AM



SYMBOL LEGEND:

+ 10.0	SPOT GROUND ELEVATION
+ 10.00	SPOT HARD SURFACE ELEVATION
□	8"x8" CONCRETE LIGHT POLE
	METAL SIGN POST
BFP (NN)	BACKFLOW PREVENTOR
	BOLLARD
	CONCRETE POWER POLE W/ LIGHT
DDCV (NN)	DOUBLE DETECTOR CHECK VALVE
	DECORATIVE LIGHT POLE
D	STORM DRAIN MANHOLE
E	ELECTRIC MANHOLE
	ELECTRIC METER
	ELECTRIC PULLBOX
	FIRE HYDRANT
IRR	IRRIGATION CONTROL VALVE
	CABLE TELEVISION PULLBOX
	TELEPHONE PEDESTAL
	POST INDICATOR VALVE
	SANITARY SEWER CLEANOUT
S	SANITARY SEWER MANHOLE
	SIAMESE FIRE DEPARTMENT CONNECTION
T	TELEPHONE MANHOLE
	TELEPHONE PULLBOX
	TRAFFIC SIGNAL CONTROL BOX
	TRAFFIC SIGNAL POLE
	TRAFFIC SIGNAL PULLBOX
	UTILITY ANCHOR
	WATER METER
	WATER VALVE
	PEDESTRIAN CROSSING SIGNAL
	MONITORING WELL

ABBREVIATION LEGEND:

A.F.	ALUMINUM FENCE
BFP	BACK–FLOW PREVENTOR
BH	BUD HEIGHT
B.O.S.	BOTTOM OF STRUCTURE
C&G	CONCRETE CURB AND GUTTER
C.L.F.	CHAIN LINK FENCE
C.L.P.	CONCRETE POWER POLE WITH LIGHT
CONC.	CONCRETE
EOP	EDGE OF PAVEMENT
FND.	FOUND
I.E.	INVERT ELEVATION
LB	LICENSED BUSINESS
M.D.C.R.	MIAMI–DADE COUNTY RECORDS
OHW	OVERHEAD WIRES
O.R.B.	OFFICIAL RECORDS
P.B.	PLAT BOOK
PG.	PAGE
R.C.P.	REINFORCED CONCRETE PIPE
R.E.	RIM ELEVATION
C	CENTERLINE

KEYED NOTE:

1. EXISTING MANHOLE TO REMAIN.
2. REPLACE EXISTING SANITARY SEWER. SEE DRAWING C–05
3. SEE DRAWING C–05 FOR FULL LIMITS OF SANITARY SEWER REPLACEMENT.
4. INSTALL OWNER SUPPLIED FLOW METER AT HYDRANT. FURNISH AND INSTALL BACKFLOW PREVENTER AND ALL NECESSARY TEMPORARY VALVES AND PIPING TO SUPPLY WATER FOR CONSTRUCTION.

LEGEND:

EXISTING

PROPOSED

1"=10'–0" (10 5 0 10')

MANHOLE SCHEDULE

MARK	CITY OF HALLANDALE BEACH SANITARY MANHOLE NUMBER	MANHOLE NUMBER FROM CRAVEN THOMPSON SURVEY
1	14–013	# 513
2	14–014	# 515
3	14–015	NOT APPLICABLE

ALL ELEVATIONS IN NAVD 1988

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown 2020.02.05 12:04:58-05'00'

FLOOD HAZARD DOCUMENTATION

PARAMETER	VALUE	NOTES
FEMA FLOOD MAP	12011C0731H	
FLOOD ZONE	AH	
100–YR FLOOD EL. (NAVD1988)	6.00	BASED ON FEMA MAP
DESIGN FLOOD EL. (NAVD1988)	6.00	AS DEFINED IN ASCE 24–14
BASE FLOOD EL. (NAVD1988)	6.00	AS DEFINED IN ASCE 24–14
COASTAL HIGH HAZARD	NO	
COASTAL ZONE A	NO	
FLOOD DESIGN CLASS	1	ASCE 24–14 TABLE 1–1
MINIMUM FLOOR EL. CRITERION REQUIRED VALUE DESIGN VALUE COMPLIES	 DFE 6.00 6.50 YES	ASCE 24–14 TABLE 2–1
MINIMUM EQUIPMENT EL. CRITERION REQUIRED VALUE DESIGN VALUE COMPLIES	 DFE 6.00 7.40 YES	ASCE 24–14 TABLE 7–1
ASCE 24–14: AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD TITLED "FLOOD RESISTANT DESIGN AND CONSTRUCTION". NAVD: NORTH AMERICAN VERTICAL DATUM		

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

UTILITY LEGEND (UNDERGROUND):

- COM — COMMUNICATION, CABLE TELEVISION TELEPHONE LINES
- ELEC — ELECTRIC
- GAS — GAS MAIN
- FM — SANITARY FORCE MAIN
- SS — SANITARY SEWER MAIN
- STM — STORM DRAINAGE
- WM — WATER

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–C04

Hallandale Beach PROSPERITY, INNOVATION, OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9
PROPOSED SITE PLAN

DATE : FEBRUARY 2020
SHEET : 7 OF 42
DRAWING : C–04

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: tbocas

XREFs= ..\dms49216\40612–030–BP4TB,..\dms49208\PW–PT–MP,..\dms49208\PW–PT–SP,..\dms49208\SP–ST–X,..\dms49208\PW–PT–EP,..\dms49208\PW–SF–SP,..\dms49208\SP–YP–P

File = C:\bms\hazen–pw\dms49209\40612–030BP4–C04 Saved by tbocas Save date = 2/4/2020 3:07 PM

SANITARY SEWER REPLACEMENT PLAN
NTS

SEE DRAWING C–06 FOR PROFILE OF PROPOSED SEWER

MANHOLE SCHEDULE		
MARK	CITY OF HALLANDALE BEACH SANITARY MANHOLE NUMBER	MANHOLE NUMBER FROM CRAVEN THOMPSON SURVEY
1	14–013	# 513
2	14–014	# 515
3	14–015	NOT APPLICABLE

GENERAL NOTES:

1. PROPOSED SANITARY SEWER PIPE INVERTS SHALL MATCH EXISTING INVERTS.
2. RESTRAIN ALL JOINTS.
3. PRESSURE TEST PROPOSED SANITARY SEWER TO 150–PSI.

KEYED NOTE:

1. REMOVE THE EXISTING GRAVITY SANITARY SEWER PIPE (ASSUMED TO BE 10" DIAMETER CLAY) AND REPLACE WITH PVC PIPE THAT CONFORMS TO THE FOLLOWING:
   - A. COMPLY WITH AWWA C900
   - B. PRESSURE CLASS 165; DR=25
   - C. TEST PIPE FOLLOWING INSTALLATION (BUT PRIOR TO FINAL CONNECTION WITH THE MANHOLES) TO 150 PSI TEST PRESSURE
   - D. MATCH DIAMETER AND SLOPE OF THE EXISTING PIPE BEING REPLACED. FOR THE PURPOSE OF BIDDING ASSUME THAT THE REPLACEMENT PIPE WILL BE 10" DIAMETER.
2. RESTORE PAVEMENT FOR FULL ROAD WIDTH AS INDICATED IN THE CIVIL DETAILS.

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:03-05'00'

LEGEND:

APPROXIMATE LOCATION OF PROPOSED PRODUCTION WELL PW–9

NOTES:

1. FLEXIBLE MANHOLE CONNECTOR SHALL BE KOR–N–SEAL OR EQUAL.
2. ENLARGE EXISTING HOLE IN MANHOLE WALL IF NEEDED FOR THE PROPOSED 10–INCH SANITARY SEWER.
3. USE NON–SHRINK GROUT TO CREATE A SMOOTH SURFACE IN THE HOLE OF THE MANHOLE WALL AS RECOMMENDED BY THE BOOT MANUFACTURER.
4. PATCH ANY VOIDS (BUG HOLES) WITH NON–SHRINK GROUT.
5. REMOVE ANY WIRE PROTRUDING UP INTO THE HOLE AND PATCH WITH NON–SHRINK GROUT.

DETAIL 1 / – NTS

LEGEND:

EXISTING

PROPOSED

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–C05

Beach Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

PROPOSED SANITARY SEWER REPLACEMENT PLAN

DATE : FEBRUARY 2020
SHEET : 8 OF 42
DRAWING : C–05

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49209\40612–030BP4–C05 Saved by tbocas Save date = 12/13/2019 10:33 AM

PLAN
1"=20'

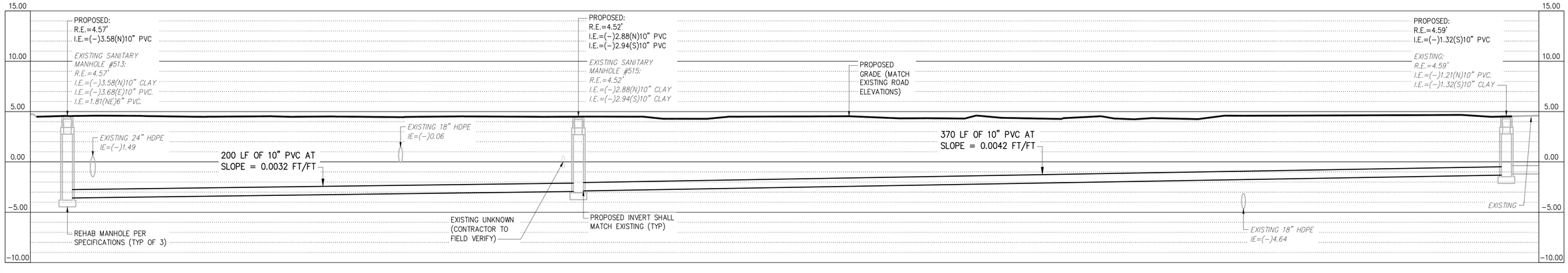
LEGEND

EXISTING

PROPOSED

1"=20'-0" 20 10 0 20'

1"=5'-0" 5 2.5 0 5'



PROFILE
HORI: 1"=20'
VERT: 1"=5'

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:08-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN T.B.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C06

Beach PROSPER. INNOVATION. OPPORTUNITY
Hallandale Beach
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
PROPOSED SANITARY SEWER PLAN AND PROFILE

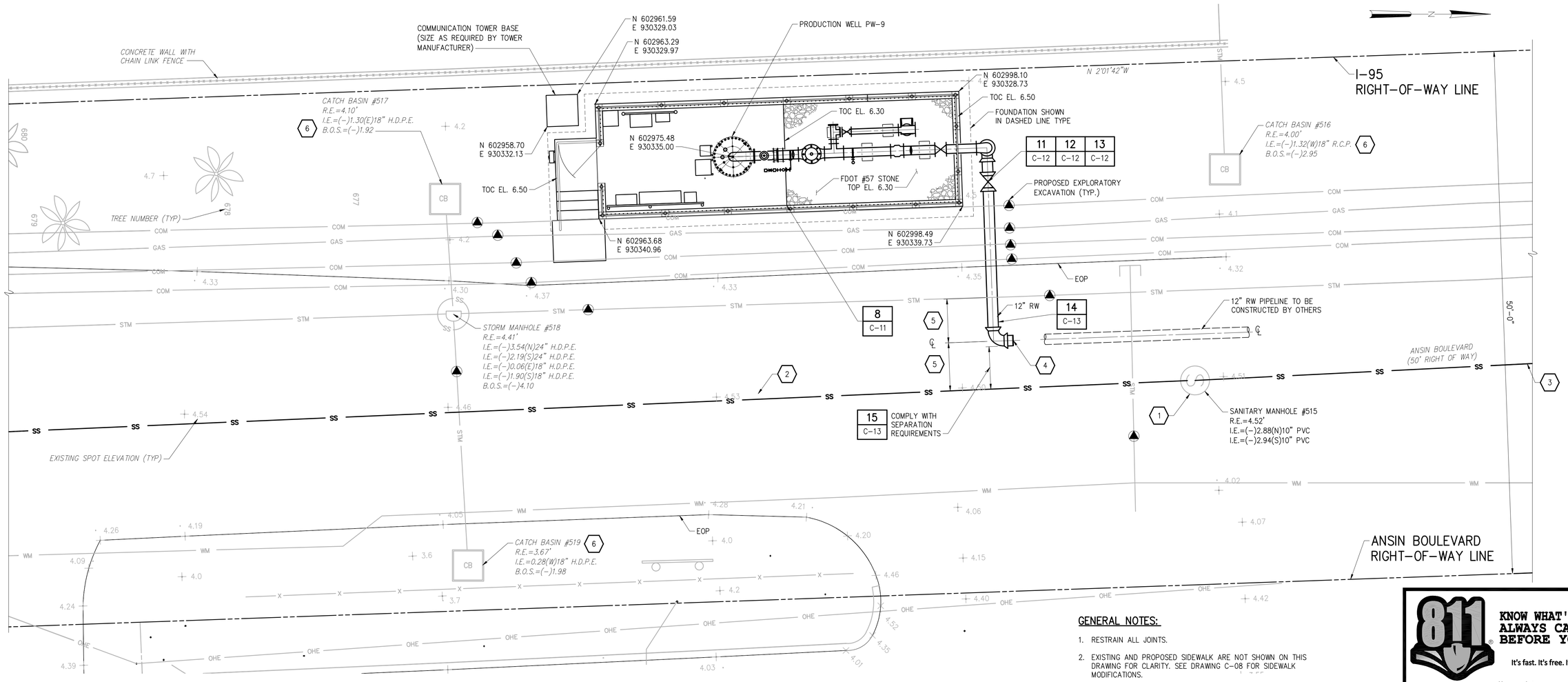
DATE : FEBRUARY 2020
SHEET : 9 OF 42
DRAWING : C-06

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\SP-ST-X,..\dms49208\SP-YP-P

File = C:\pms\hazen-pw\dms49209\40612-030BP4-C06 Saved by tbocas Save date = 12/13/2019 10:33 AM



SYMBOL LEGEND:

- +10.0 SPOT GROUND ELEVATION
- +10.00 SPOT HARD SURFACE ELEVATION
- 8"x8" CONCRETE LIGHT POLE
- METAL SIGN POST
- BFP (NN) BACKFLOW PREVENTOR
- BOLLARD
- CONCRETE POWER POLE W/ LIGHT
- DDCV NN DOUBLE DETECTOR CHECK VALVE
- DECORATIVE LIGHT POLE
- STORM DRAIN MANHOLE
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PULLBOX
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- GROUND LIGHT
- SHADE TREE
- PALM TREE
- CABLE TELEVISION PULLBOX
- TELEPHONE PEDESTAL
- POST INDICATOR VALVE
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- SIAMESE FIRE DEPARTMENT CONNECTION
- TELEPHONE MANHOLE
- TELEPHONE PULLBOX
- TRAFFIC SIGNAL CONTROL BOX
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL PULLBOX
- UTILITY ANCHOR
- WATER METER
- WATER VALVE
- PEDESTRIAN CROSSING SIGNAL
- MONITORING WELL

ABBREVIATION LEGEND:

A.F.	ALUMINUM FENCE
BFP	BACK-FLOW PREVENTOR
BH	BUD HEIGHT
B.O.S.	BOTTOM OF STRUCTURE
C&G	CONCRETE CURB AND GUTTER
C.L.F.	CHAIN LINK FENCE
C.L.P.	CONCRETE POWER POLE WITH LIGHT
CONC.	CONCRETE
EOP	EDGE OF PAVEMENT
FND.	FOUND
I.E.	INVERT ELEVATION
LB	LICENSED BUSINESS
M.D.C.R.	MIAMI-DADE COUNTY RECORDS
OHW	OVERHEAD WIRES
O.R.B.	OFFICIAL RECORDS
P.B.	PLAT BOOK
PG.	PAGE
R.C.P.	REINFORCED CONCRETE PIPE
R.E.	RIM ELEVATION
C	CENTERLINE

UTILITY LEGEND (UNDERGROUND):

- COM — COMMUNICATION, CABLE TELEVISION TELEPHONE LINES
- ELEC — ELECTRIC
- GAS — GAS MAIN
- FM — SANITARY FORCE MAIN
- SS — SANITARY SEWER MAIN
- STM — STORM DRAINAGE
- WM — WATER

KEYED NOTE:

1. EXISTING MANHOLE TO REMAIN. REHAB MANHOLE PER SPECIFICATIONS.
2. REPLACE EXISTING SANITARY SEWER.
3. SEE DRAWING C-05 FOR FULL LIMITS OF SANITARY SEWER REPLACEMENT.
4. MECHANICAL JOINT PLUG RESTRAINED WITH MEGA-LUG SHOWN. CONTRACTOR SHALL REMOVE PLUG AND MAKE FINAL CONNECTION WITH THE 10-INCH RAW WATER PIPELINE CONSTRUCTED BY OTHERS. FURNISH AND INSTALL A SOLID SLEEVE COUPLING, A MINIMUM OF 10-FEET OF 10-INCH RAW WATER PIPE AND RESTRAINING DEVICES FOR ALL JOINTS.
5. CENTER THE PROPOSED 10-INCH RAW WATER PIPE BETWEEN THE EXISTING STORM DRAINAGE PIPE AND THE PROPOSED SANITARY SEWER.
6. PROTECT ALL CATCH BASINS WITH STRAW BALE SEDIMENT FILTERS. AT COMPLETION OF CONSTRUCTION REMOVE ALL DEBRIS AND SEDIMENTS FROM THE CATCH BASIN STRUCTURES.

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:15-05'00'

GENERAL NOTES:

1. RESTRAIN ALL JOINTS.
2. EXISTING AND PROPOSED SIDEWALK ARE NOT SHOWN ON THIS DRAWING FOR CLARITY. SEE DRAWING C-08 FOR SIDEWALK MODIFICATIONS.
3. PERFORM ALL NECESSARY EXPLORATORY EXCAVATIONS TO VERIFY THE LOCATION, ELEVATION AND ALIGNMENT OF EXISTING UNDERGROUND UTILITIES THAT MAY INTERFERE WITH THE PROPOSED IMPROVEMENTS.
4. THE OWNERS OF THE EXISTING UNDERGROUND COMMUNICATION LINES AND GAS MAIN NEARBY WELL PW-9 ARE UNKNOWN. THE CONTRACTOR SHALL COORDINATE WITH SERVICE PROVIDERS AND DETERMINE OWNERSHIP OF THESE UTILITIES.
5. THE CONTRACTOR SHALL COORDINATE WITH THE OWNERS OF THE EXISTING UNDERGROUND COMMUNICATION LINES AND GAS MAIN TO RELOCATE ITS UTILITIES AS REQUIRED TO AVOID CONFLICT WITH THE PROPOSED WELL PW-9.
6. THE CONTRACTOR SHALL CONTACT THE OWNERS OF THE EXISTING UNDERGROUND COMMUNICATION LINES AND GAS MAIN AS SOON AS POSSIBLE AFTER ITS NOTICE TO PROCEED TO INITIATE THE RELOCATION OF CONFLICTING UTILITIES.
7. THE OWNERS OF THE EXISTING UNDERGROUND COMMUNICATION LINES AND GAS MAIN SHALL BE PAID FOR THE RELOCATION BY THE CITY OF HALLANDALE BEACH THROUGH AN ALLOWANCE BID ITEM TITLED "UTILITY RELOCATION ALLOWANCE". THE CONTRACTOR SHALL SUBMIT INVOICES FROM THE UTILITY OWNERS DOCUMENTING ITS COSTS.
8. ALL CONTRACTOR WORK RELATED TO THE RELOCATION OF THE UNDERGROUND COMMUNICATION LINES AND GAS MAIN (I.E., COORDINATION, EXPLORATORY EXCAVATIONS, AND OTHER ASSOCIATED COSTS) SHALL BE PAID FOR THROUGH AN ALLOWANCE BID ITEM TITLED " UTILITY RELOCATION ALLOWANCE". THE AMOUNT TO BE PAID SHALL BE NEGOTIATED AND AGREED TO BY THE CONTRACTOR AND THE CITY OF HALLANDALE BEACH.

KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

ALL ELEVATIONS IN NAVD 1988

LEGEND:

- EXISTING
- PROPOSED
- TO BE CONSTRUCTED BY OTHERS
- PROPOSED EXPLORATORY EXCAVATION

1"=5' 5 2.5 0 5'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C07

Hallandale Beach PROSPERITY, INNOVATION, OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ENLARGED SITE PLAN

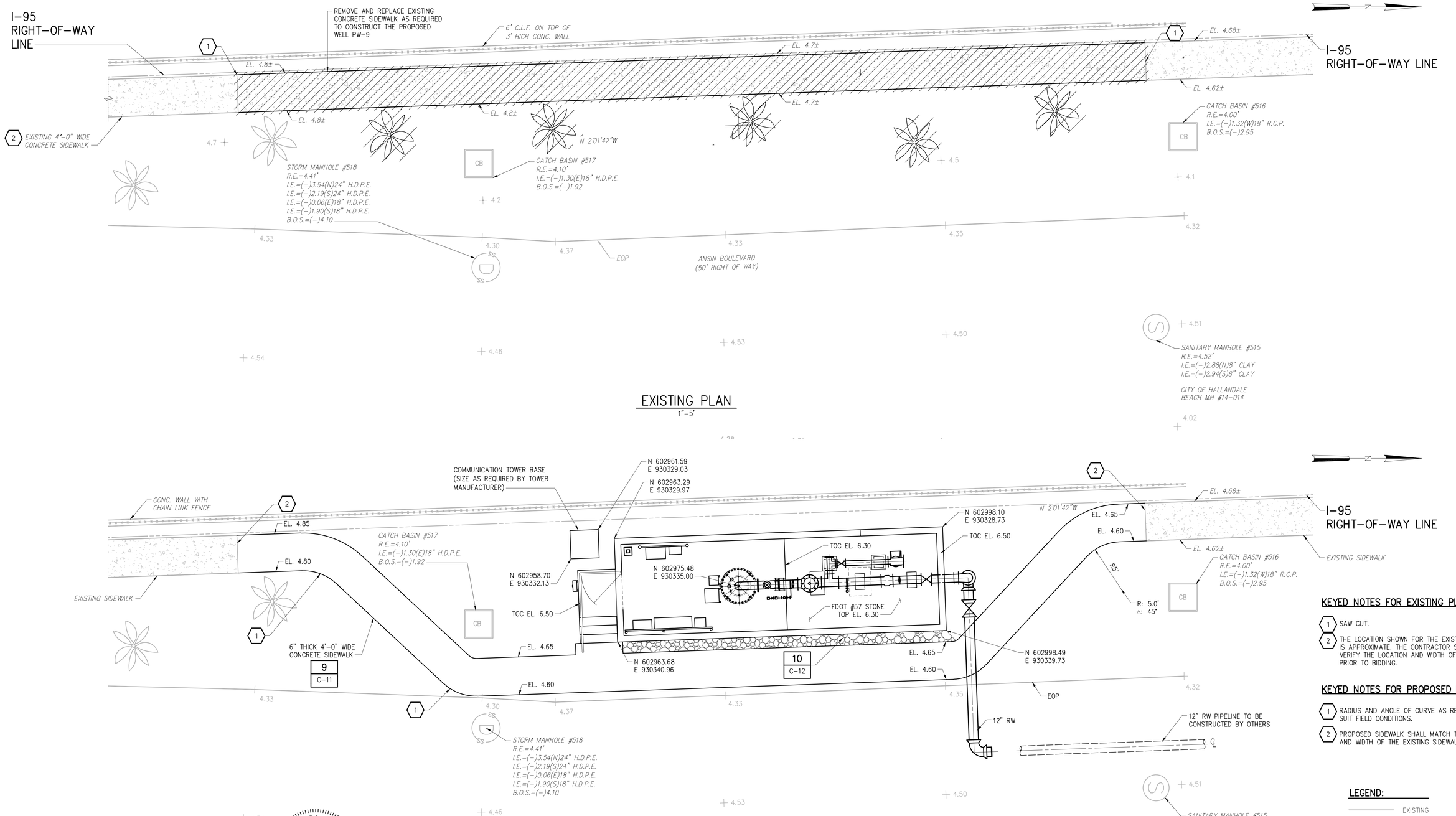
DATE: FEBRUARY 2020
SHEET: 10 OF 42
DRAWING: C-07

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-MP,..\dms49208\PW-PT-SP,..\dms49208\PW-SF-SP,..\dms49208\PW-PT-EP,..\dms49208\SP-ST-X,..\dms49208\SP-YP-P

File = C:\bms\hazen-pw\dms49209\40612-030BP4-C07 Saved by tbocas Save date = 1/21/2020 2:56 PM



EXISTING PLAN
1"=5'

PROPOSED PLAN
1"=5'

KEYED NOTES FOR EXISTING PLAN:

1. SAW CUT.
2. THE LOCATION SHOWN FOR THE EXISTING SIDEWALK IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND WIDTH OF SIDEWALK PRIOR TO BIDDING.

KEYED NOTES FOR PROPOSED PLAN:

1. RADIUS AND ANGLE OF CURVE AS REQUIRED TO SUIT FIELD CONDITIONS.
2. PROPOSED SIDEWALK SHALL MATCH THE ELEVATION AND WIDTH OF THE EXISTING SIDEWALK.

LEGEND:

EXISTING
PROPOSED
TO BE CONSTRUCTED BY OTHERS

1"=5' (5 2.5 0 5')

ALL ELEVATIONS IN NAVD 1988

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:20-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN G.B.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C08

Beach Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

SIDEWALK RELOCATION PLAN

DATE: FEBRUARY 2020
SHEET: 11 OF 42
DRAWING: C-08

BID SET

PLOT DATE: 2/5/2020 9:09 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\SP-ST-X,..\dms49208\PW-PT-MP,..\dms49208\PW-PT-SP,..\dms49208\PW-PT-EP

File = C:\bms\hazen-pw\dms49209\40612-030BP4-C08 Saved by tbocas Save date = 1/21/2020 2:56 PM

GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF TEMPORARY PIPING.
2. DESIGN TEMPORARY PIPING TO NOT BLOCK ACCESS TO BUSINESS ENTRANCES ALONG ROUTE.
3. THE EXISTING FDOT PUMP STATION CONTAINS FOUR PUMPS. EACH PUMP HAS A CAPACITY OF 17,290-GPM.
4. FDOT PUMP STATION ERP PERMIT NO.: 06-02942-P.
5. RECORD DRAWINGS OF THE EXISTING FDOT PUMP STATION AND 84-INCH STOPRMWATER PIPE ARE INCLUDED AS AN ATTACHMENT.

GEORGE A. BROWN LICENSE ★ No. 56076 ★ STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:24-05'00'

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

UTILITY LOCATES

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

XREFs= ..\dms49216\40612-030-BP4TB

DESIGNED G.A.B.
DRAWN R.D.A.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C09

Beach Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

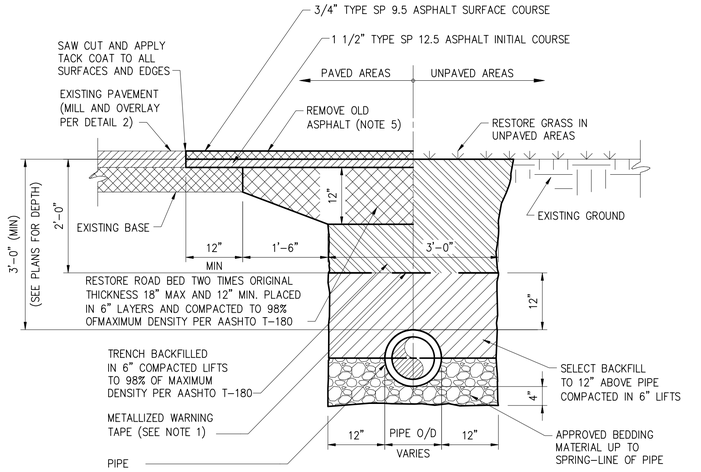
DEVELOPMENT WATER DISPOSAL PLAN

DATE : FEBRUARY 2020
SHEET : 12 OF 42
DRAWING : C-09

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

File = C:\pms\hazen-pw\dms49209\40612-030BP4-C09 Saved by MNiemiec Save date = 8/29/2019 8:12 AM

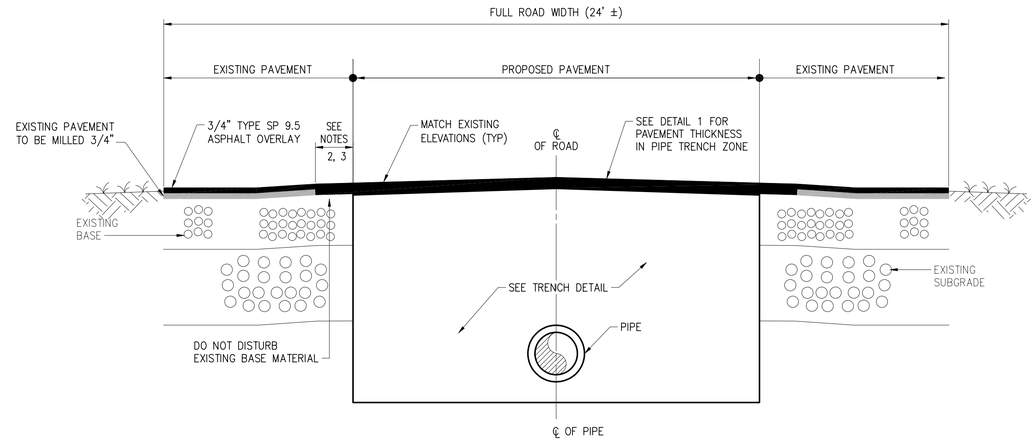


NOTES:

1. METALLIZED WARNING TAPES SHALL BE INSTALLED 24" BELOW FINISH GRADE CENTERED ABOVE THE PIPE.
2. SELECTED BACKFILL MATERIAL SHALL BE FREE OF STONES LARGER THAN 3/4" DIA.
3. REPLACE ALL LANE MARKINGS AND REFLECTIVE MARKERS.
4. DEPTH OF PIPE VARIES. SEE PIPING PLANS FOR PROPOSED DEPTHS. MINIMUM DEPTH OF COVER SHALL BE 36 INCHES
5. ASSUME ASPHALT DEPTH AVERAGES TWO INCHES.

TYPICAL TRENCH AND PAVEMENT RESTORATION

DETAIL 1 | NTS –

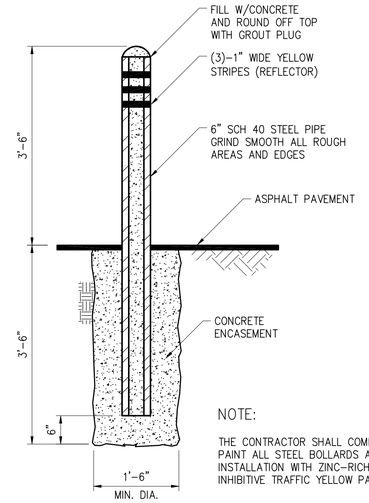


NOTES:

1. RESTORE PAVEMENT ALONG ENTIRETY OF PROPOSED SANITARY SEWER REPLACEMENT IN ACCORDANCE WITH THIS DETAIL.
2. BASE MATERIAL SHALL HAVE A MINIMUM CARBONATE OF 70%.
3. AT LOCATIONS WHERE PROPOSED PAVEMENT WILL TIE– IN TO EXISTING PAVEMENT, CONTRACTOR SHALL MECHANICALLY SAW–CUT A CLEAN STRAIGHT EDGE AND REMOVE 6" OF THE EXISTING PAVEMENT (TYP) ALONG THE PROPOSED ROAD, AND MATCH THE THICKNESS OF THE EXISTING PAVEMENT.

ROAD RESTORATION

DETAIL 2 | NTS –

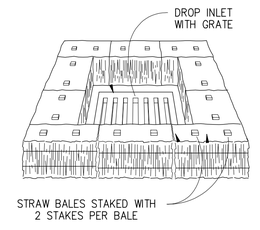


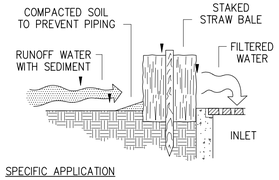
NOTE:

THE CONTRACTOR SHALL COMPLETELY PAINT ALL STEEL BOLLARDS AFTER INSTALLATION WITH ZINC–RICH RUST INHIBITIVE TRAFFIC YELLOW PAINT.

BOLLARDS

DETAIL 3 | NTS –



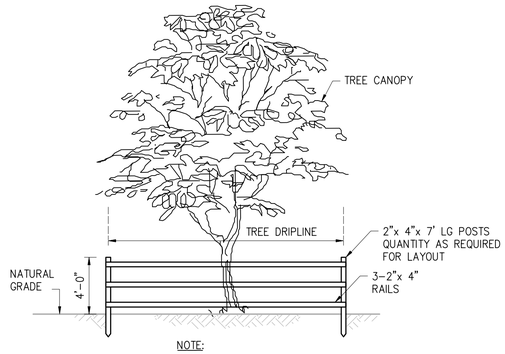


SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 CFS) ARE TYPICAL. THIS METOD SHALL NOT APPLY TO INLETS RECIEVEING CONCENTRAED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

STRAW BALE DROP INLET SEDIMENT FILTER

DETAIL 4 | NTS –

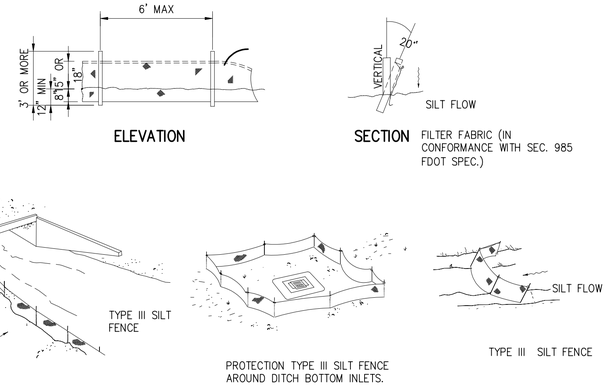


NOTE:

BEFORE SITE CLEARING BEGINS PROVIDE NECESSARY MEASURES TO ASSURE SURVIVAL OF VEGETATION.

TEMPORARY TREE PROTECTION BARRIER

DETAIL 5 | NTS –



PROTECTION TYPE III SILT FENCE AROUND DITCH BOTTOM INLETS.

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

APPLICATIONS

SILT FENCE

DETAIL 6 | NTS –

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:30-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–C10

Beach PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

CIVIL DETAILS – SHEET 1

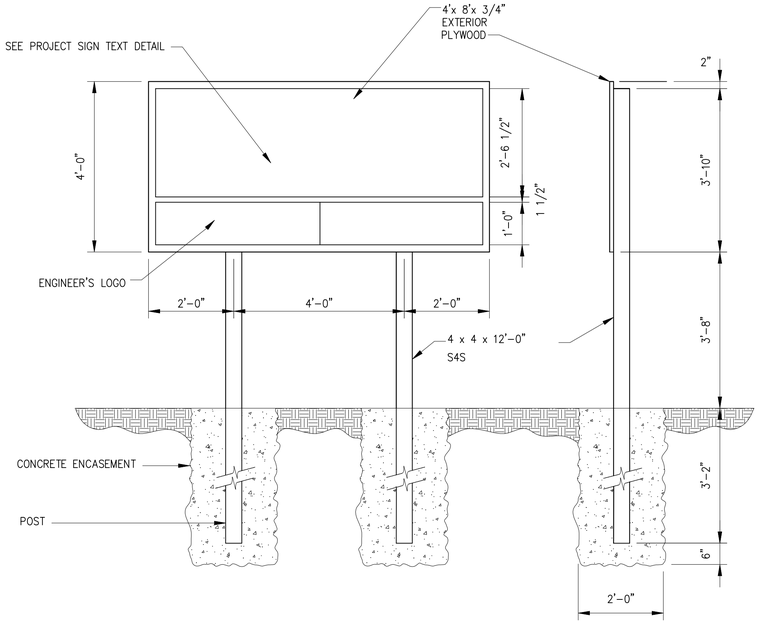
DATE: FEBRUARY 2020
SHEET: 13 OF 42
DRAWING: C–10

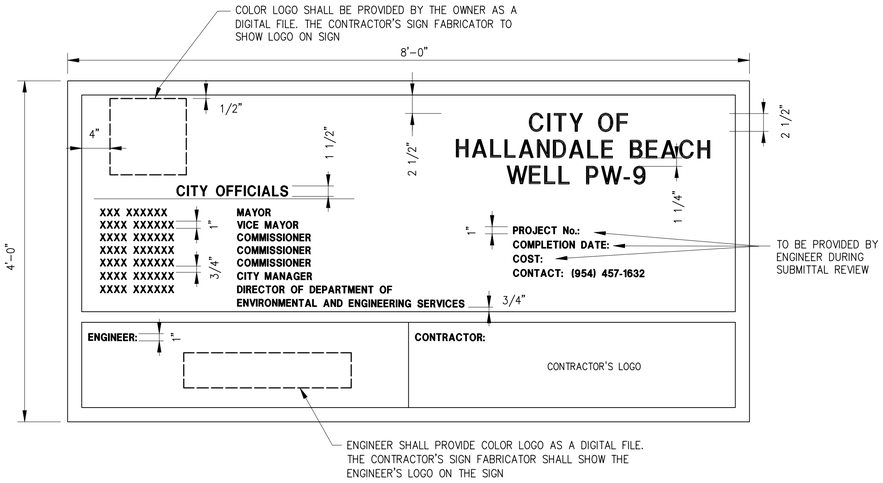
BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49209\40612–030BP4–C10 Saved by tbocas Save date = 12/13/2019 10:33 AM





PROJECT SIGN

DETAIL	7
NTS	C-01

NOTES:

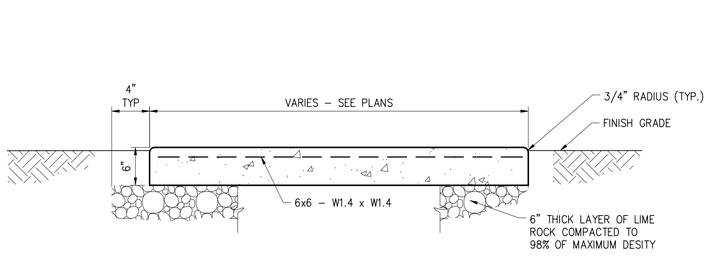
LETTERS SHALL BE HELVETICA MEDIUM BLUE (PANTONE 301) ON WHITE BACKGROUND. BORDER SHALL BE BLUE (PANTONE 301)

NOTES:

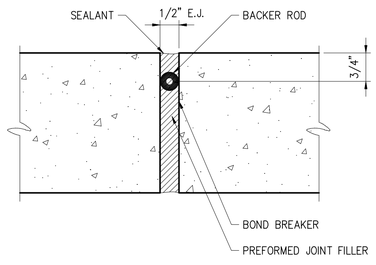
1. SIGN SHALL BE 1/8" ALUMINUM WITH WHITE REFLECTIVE BACKGROUND AND BLACK LETTERS.
2. LETTERS SHALL BE 1" HIGH.
3. SIGN SHALL BE PERMANENTLY ATTACHED TO THE FENCE AND VISIBLE FROM THE STREET.

SIGN

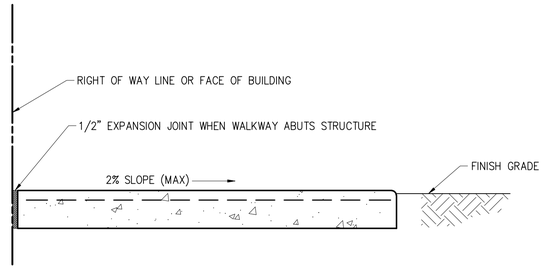
DETAIL	8
NTS	-



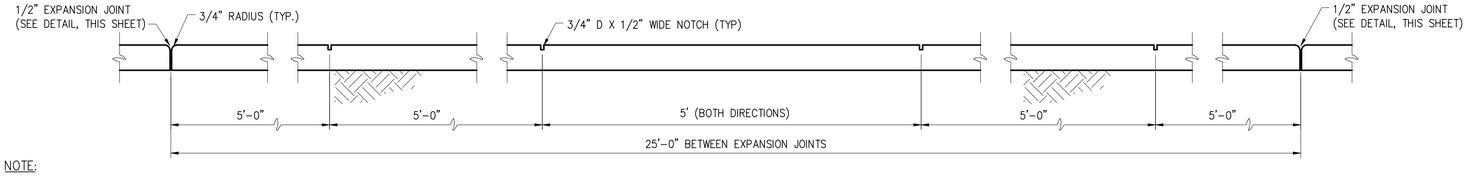
CONCRETE WALKWAY REINFORCING



CONCRETE WALKWAY EXPANSION JOINT



SLOPE



SECTION

NOTE:

1. THE CONTRACTOR SHALL CONSTRUCT AN EXPANSION JOINT AT SPACING SHOWN ABOVE, AT THE END OF DAYS WORK, POINTS OF CURVATURE, AND AT ADJOINING STRUCTURES.

CONCRETE SIDEWALK

DETAIL	9
NTS	-

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:35-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-C11

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
CIVIL DETAILS - SHEET 2

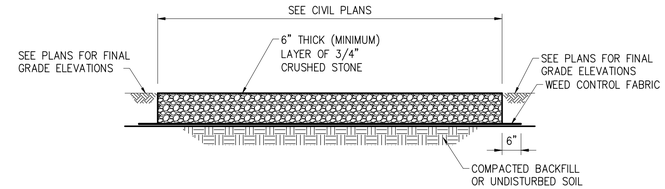
DATE: FEBRUARY 2020
SHEET: 14 OF 42
DRAWING: C-11

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

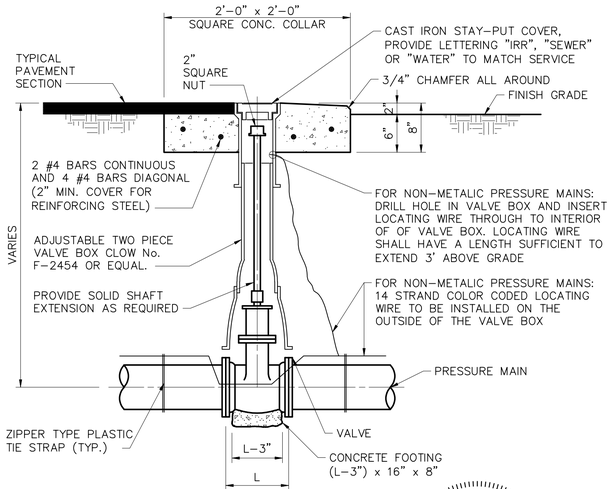
XREFs= ..\dms49216\40612-030-BP4TB

File = C:\pms\hazen-pw\dms49209\40612-030BP4-C11 Saved by tbocas Save date = 1/22/2020 4:21 PM



CRUSHED STONE BED

DETAIL	10
NTS	–



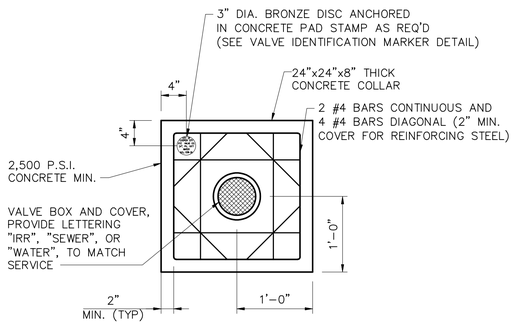
VALVE BOX

DETAIL	11
NTS	C–07

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

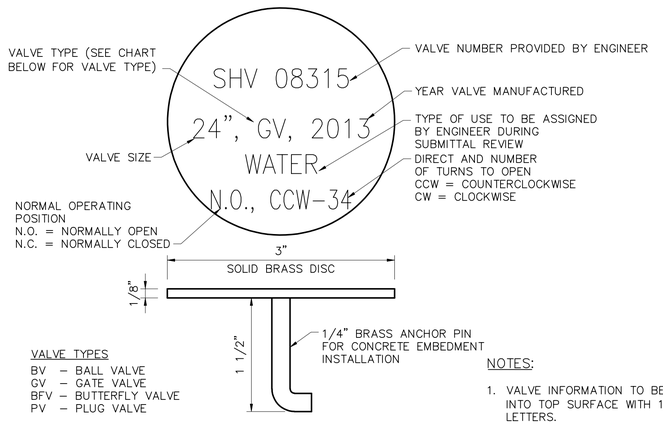
This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:41-05'00'



VALVE BOX COVER

DETAIL	12
NTS	C–07



VALVE TYPES
BV – BALL VALVE
GV – GATE VALVE
BFV – BUTTERFLY VALVE
PV – PLUG VALVE

NOTES:

1. VALVE INFORMATION TO BE ENGRAVED INTO TOP SURFACE WITH 1/4" CAPITAL LETTERS.
2. ENTIRE MARKER TO BE COATED WITH CLEAR EPOXY TO PREVENT TARNISHING.
3 MARKERS SHALL BE MANUFACTURED BY WAGCO MARKERS, OR APPROVED EQUAL.

VALVE IDENTIFICATION MARKER

DETAIL	13
NTS	C–07

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–C12

Beach
Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

CIVIL DETAILS – SHEET 3

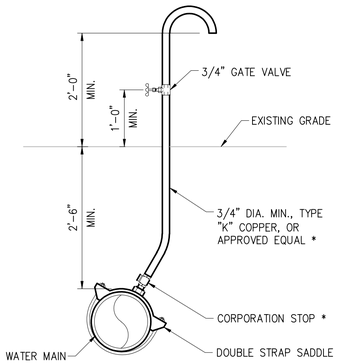
DATE: FEBRUARY 2020
SHEET: 15 OF 42
DRAWING: C–12

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bma\hazen–pw\dms49209\40612–030BP4–C12 Saved by tbocas Save date = 1/20/2020 4:21 PM



* NOTE: AFTER TESTS REMOVE 3/4" TUBING AND INSTALL PLUG ON CORPORATION STOP.

TEMPORARY BATERIOLOGICAL SAMPLE POINT

DETAIL	14
NTS	C-07

WATER MAIN SEPARATION IN ACCORDANCE WITH F.A.C. RULE 62-555.314

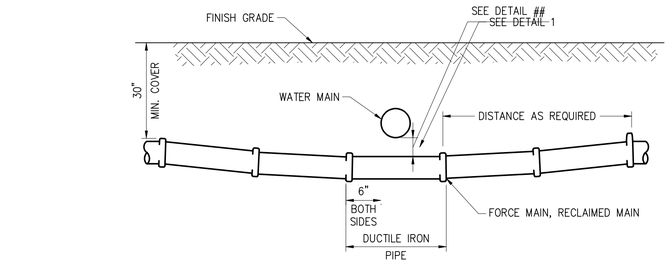
OTHER PIPE	HORIZONTAL SEPARATION	CROSSINGS (NOTE 1)	JOINT SPACING @ CROSSINGS (FULL JOINT CENTERED)
STORM SEWER, STORM WATER FORCE MAIN, RECLAIMED WATER (NOTE 2)	WATER MAIN 3 FT. MINIMUM	12 INCHES IS THE MINIMUM, EXCEPT FOR STORM SEWER, THEN 6 INCHES IS THE MINIMUM AND 12 INCHES IS PREFERRED	ALTERNATE 3 FT. MINIMUM WATER MAIN
VACUUM SANITARY SEWER	WATER MAIN 10 FT. PREFERRED 3 FT. MINIMUM	WATER MAIN 12 INCHES PREFERRED 6 INCHES MINIMUM	ALTERNATE 3 FT. MINIMUM WATER MAIN
GRAVITY SANITARY SEWER, (NOTE 3) SANITARY SEWER FORCE MAIN, RECLAIMED WATER	WATER MAIN 10 FT. PREFERRED 6 FT. MINIMUM	WATER MAIN 12 INCHES IS THE MINIMUM, EXCEPT FOR GRAVITY SEWER, THEN 6 INCHES IS THE MINIMUM AND 12 INCHES IS PREFERRED	ALTERNATE 6 FT. MINIMUM WATER MAIN
ON-SITE SEWAGE TREATMENT & DISPOSAL SYSTEM	10 FT. MINIMUM	—	—

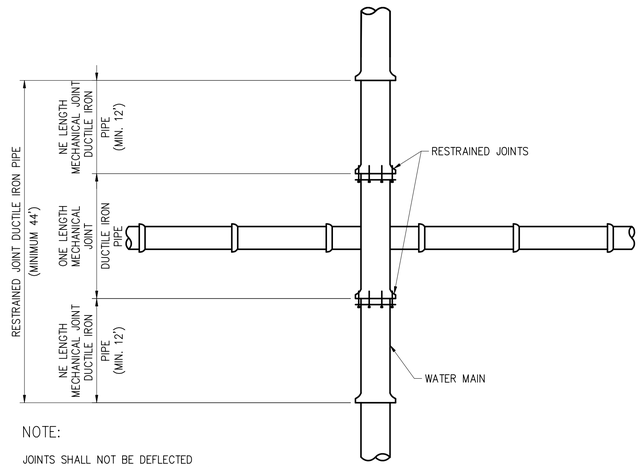
NOTES:

1. WATER MAIN SHOULD CROSS ABOVE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MINIMUM SEPARATION IS 12 INCHES.
2. RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
3. 3 FT. FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.

WATER MAIN SEPARATION

DETAIL	15
NTS	C-04



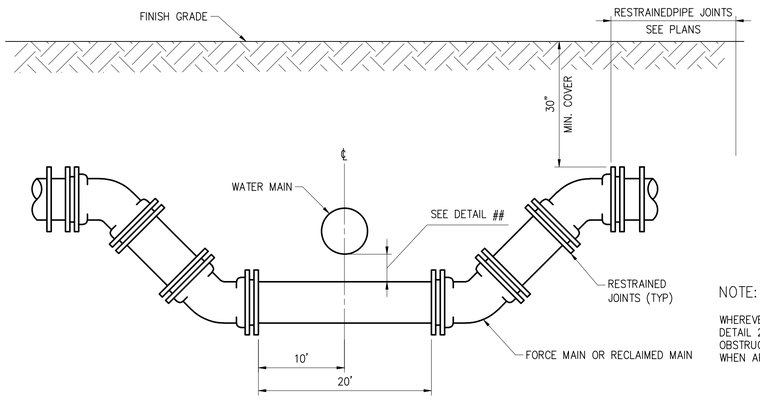


NOTE:

JOINTS SHALL NOT BE DEFLECTED MORE THAN 50% OF MANUFACTURER'S RECOMMENDED DEFLECTION

STANDARD UTILITY CROSSING

DETAIL	16
NTS	–



NOTE:

WHEREVER POSSIBLE DEFLECTION OF THE PIPE PER DETAIL 2 SHALL BE USED TO AVOID EXISTING OBSTRUCTIONS. THIS DETAIL SHALL BE USED ONLY WHEN APPROVED BY ENGINEER.

FILLING TYPE UTILITY CROSSING

DETAIL	17
NTS	–

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:45-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN –
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-C13

Hallandale Beach PROSPERITY, INNOVATION, OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

CIVIL DETAILS – SHEET 4

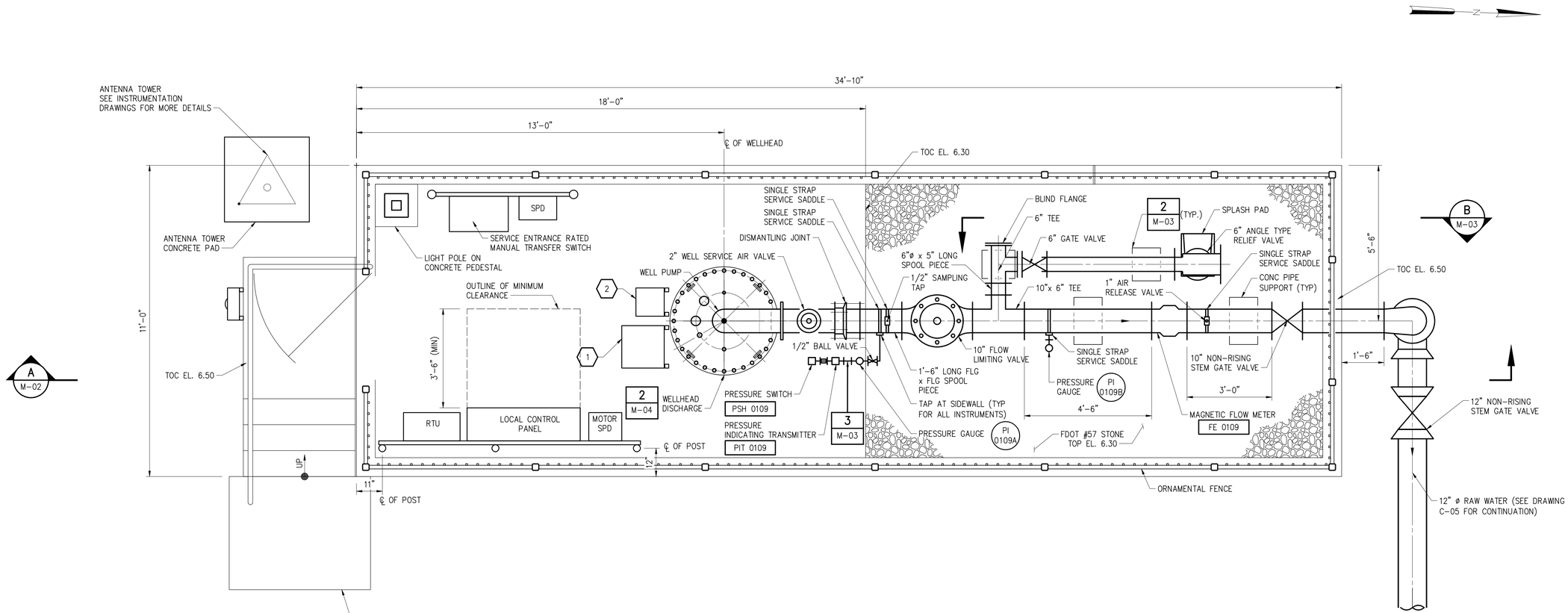
DATE: FEBRUARY 2020
SHEET: 16 OF 42
DRAWING: C-13

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49209\40612-030BP4-C13 Saved by tbocas Save date = 12/12/2019 10:39 AM



ALL ELEVATIONS IN
NAVD 1988

KEYED NOTE:

1. POWER TERMINAL JUNCTION BOX (SEE ELECTRICAL)
2. SIGNAL TERMINAL JUNCTION BOX (SEE ELECTRICAL)

1/2"=1'-0"

12" 0 1 3'

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:50-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –

ENGINEERS PROJECT: 40612-030

CAD REFERENCE: 40612-030BP4-M01

Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

PRODUCTION WELL PW-9

WELLHEAD TOP PLAN

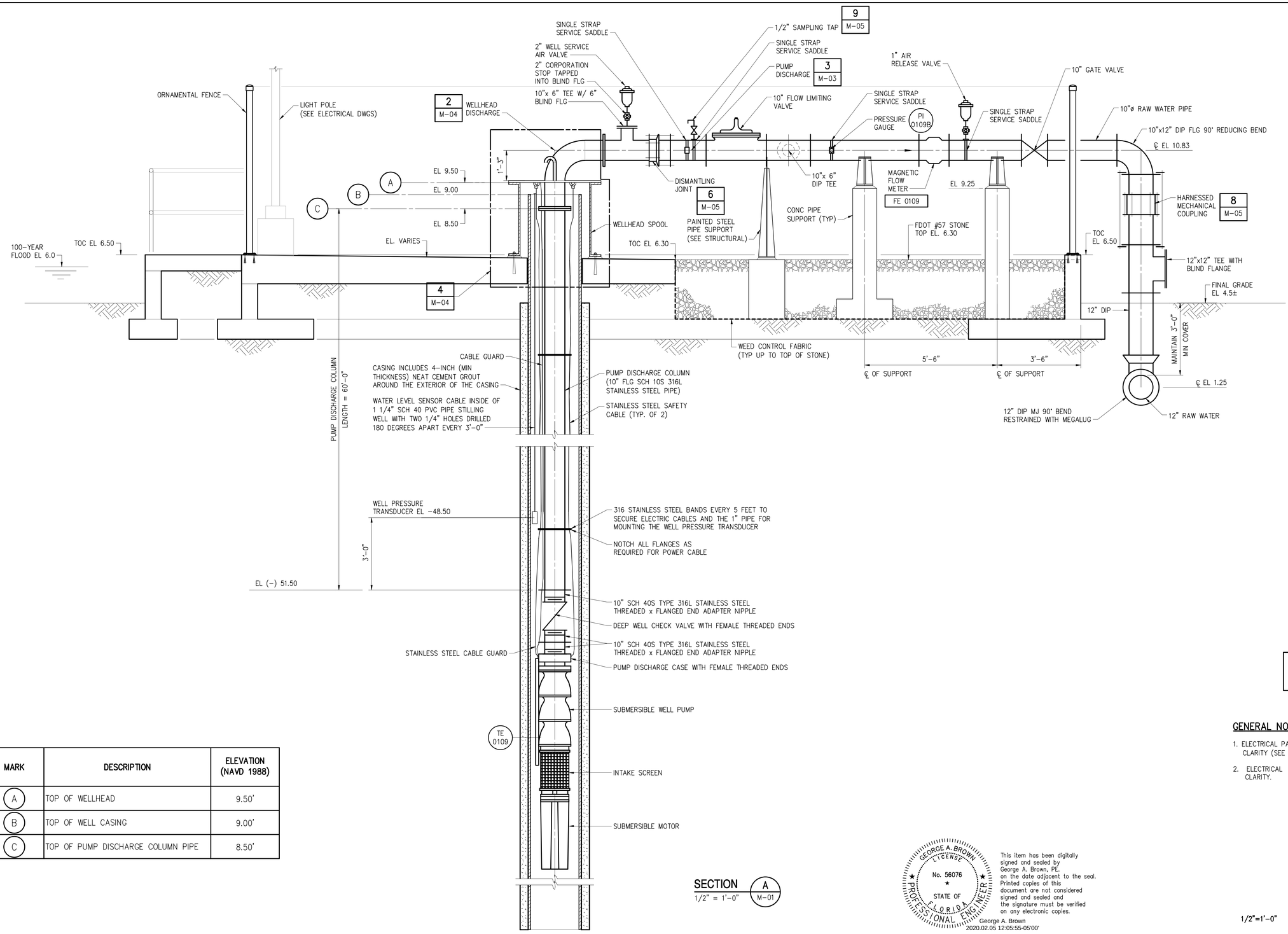
DATE: FEBRUARY 2020
SHEET: 17 OF 42
DRAWING: M-01

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-MP,..\dms49208\PW-PT-SP,..\dms49208\PW-SF-SP,..\dms49208\PW-PT-EP

File = C:\bms\hazen-pw\dms49213\40612-030BP4-M01 Saved by tbocas Save date = 1/22/2020 4:22 PM



MARK	DESCRIPTION	ELEVATION (NAVD 1988)
A	TOP OF WELLHEAD	9.50'
B	TOP OF WELL CASING	9.00'
C	TOP OF PUMP DISCHARGE COLUMN PIPE	8.50'

SECTION A M-01
1/2" = 1'-0"

ALL ELEVATIONS IN NAVD 1988

GENERAL NOTES:

1. ELECTRICAL PANEL ELEVATIONS NOT SHOWN FOR CLARITY (SEE ELECTRICAL DRAWINGS).
2. ELECTRICAL JUNCTION BOXES NOT SHOWN FOR CLARITY.

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:05:55-05'00'

1/2"=1'-0" 12" 0 1 3'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-M02

Beach Hallandale Beach PROSPEROUS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

WELLHEAD SECTION

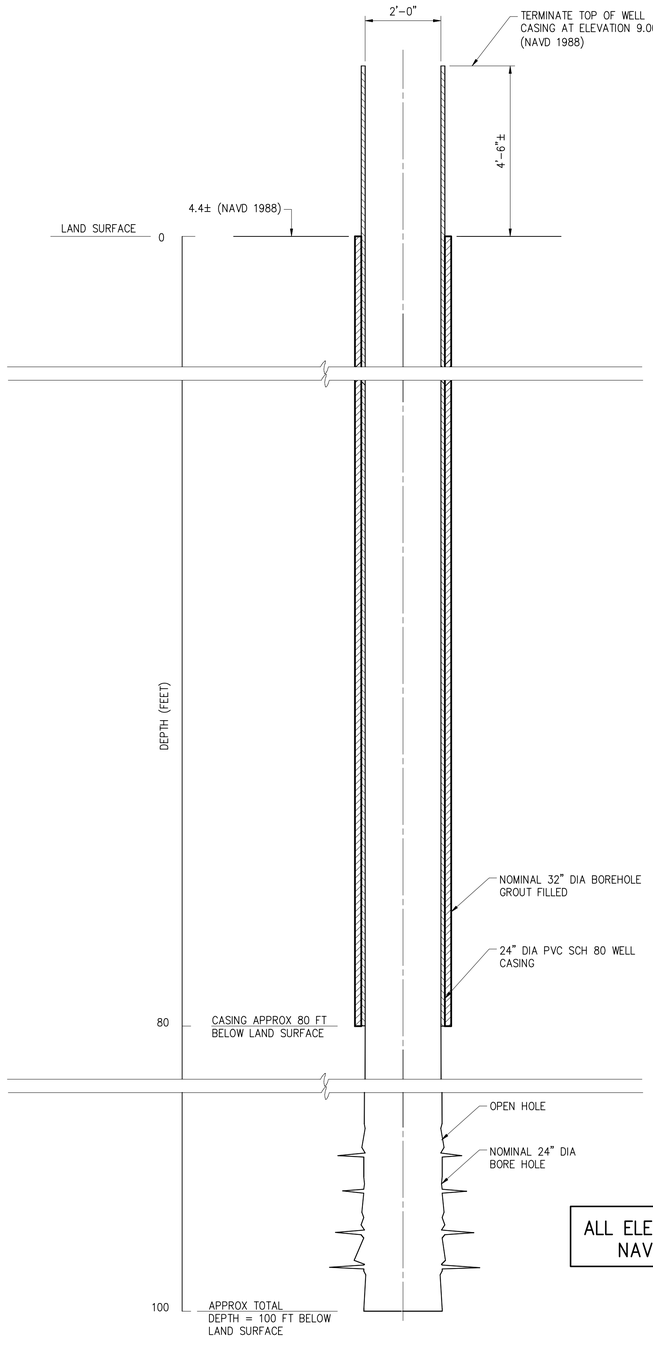
DATE: FEBRUARY 2020
SHEET: 18 OF 42
DRAWING: M-02

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-S01-SP,..\dms49208\PW-S01-MP

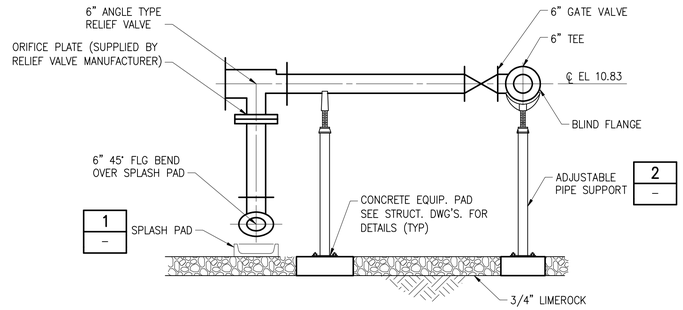
File = C:\bms\hazen-pw\dms49213\40612-030BP4-M02 Saved by tbocas Save date = 1/22/2020 4:29 PM



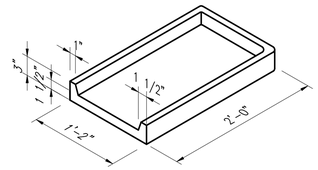
ALL ELEVATIONS IN NAVD 1988

PROPOSED RAW WATER WELL PW-9

NTS



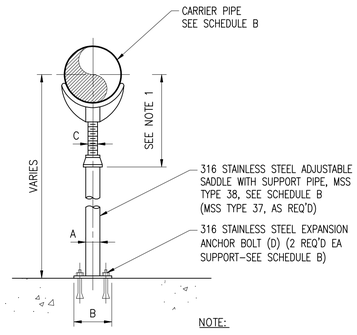
SECTION B / M-01
1/2" = 1'-0"



NOTES:

1. REINFORCE WITH 16 GAUGE 1 1/2" HEXAGON WIRE MESH.
2. PRECAST PAD OF SIMILAR DESIGN MAY BE SUBSTITUTED WITH ENGINEERS APPROVAL.

SPLASH PAD
DETAIL 1
NTS –



NOTE:

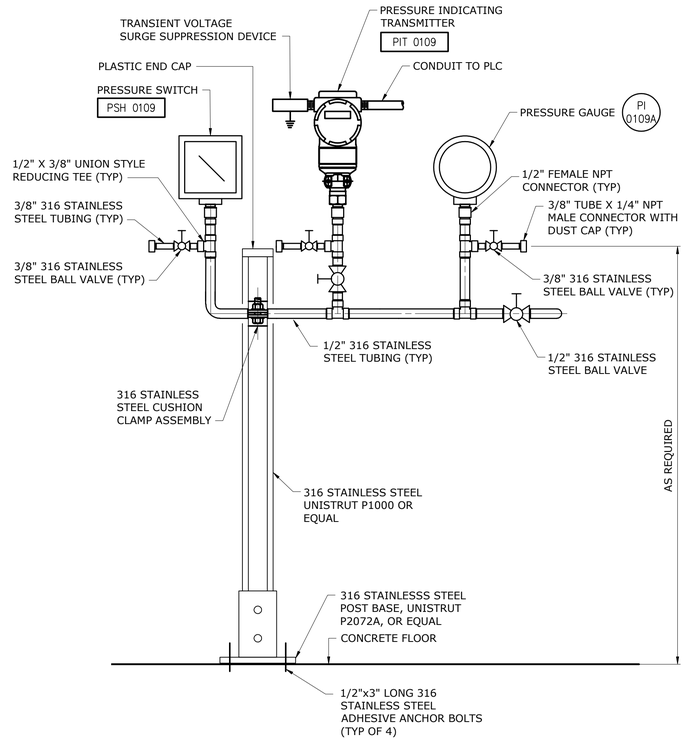
1. VARIES ACCORDING TO PIPE SIZE (APPROX 4 1/2" TOTAL ADJUSTMENT)

SCHEDULE B

ADJUSTABLE FLOOR MOUNTED PIPE SUPPORT SADDLE (DIM IN INCHES)

PIPE SIZE	A	B	C	D DIA x LG
2–3	2 1/2	7	1 1/2	5/8 x 5
4–12	3	7 1/2	2 1/2	5/8 x 5
14–16	4	9	3	5/8 x 5
18–20	6	11	3 1/2	3/4 x 6
24–36	6	11	4	3/4 x 6

ADJUSTABLE PIPE SUPPORT
DETAIL 2
NTS –



GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:06:00-05'00'

PUMP DISCHARGE
DETAIL 3
NTS -

1/2"=1'-0"

12" 0 1 3'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-M03

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

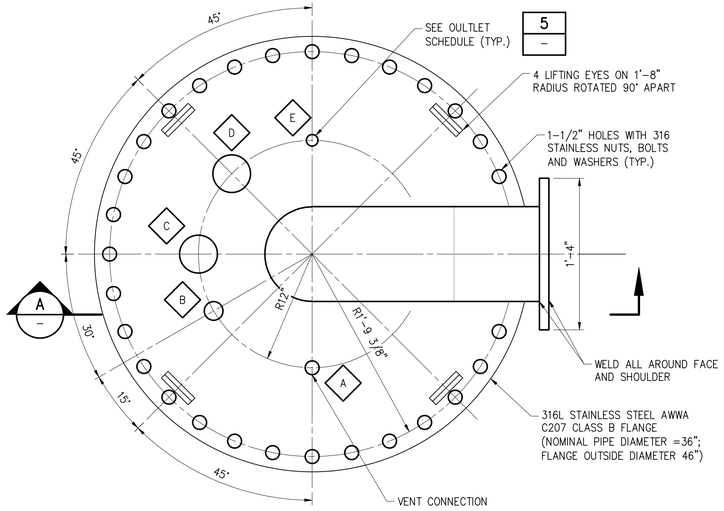
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

MECHANICAL DETAILS – SHEET 1

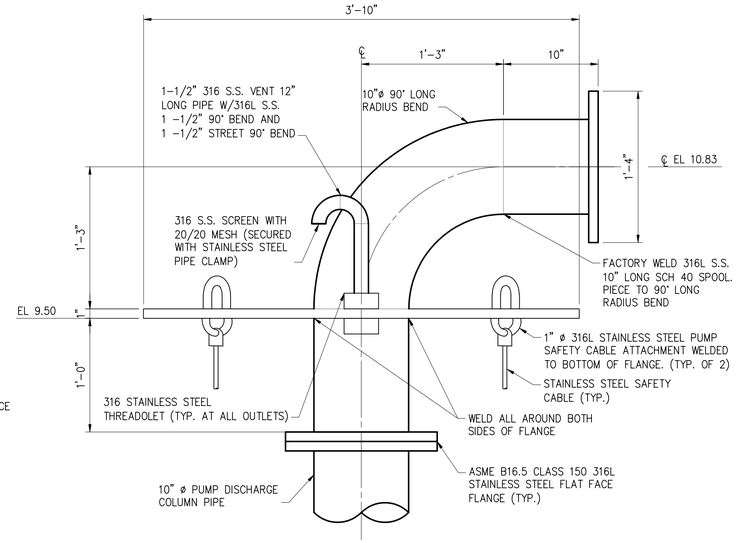
DATE: FEBRUARY 2020
SHEET: 19 OF 42
DRAWING: M-03

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS
XREFs= ..\dms49216\40612-030-BP4TB
File = C:\bms\hazen-pw\dms49213\40612-030BP4-M03 Saved by MNiemiec Save date = 12/12/2019 10:05 AM



PLAN
1-1/2"=1'-0"



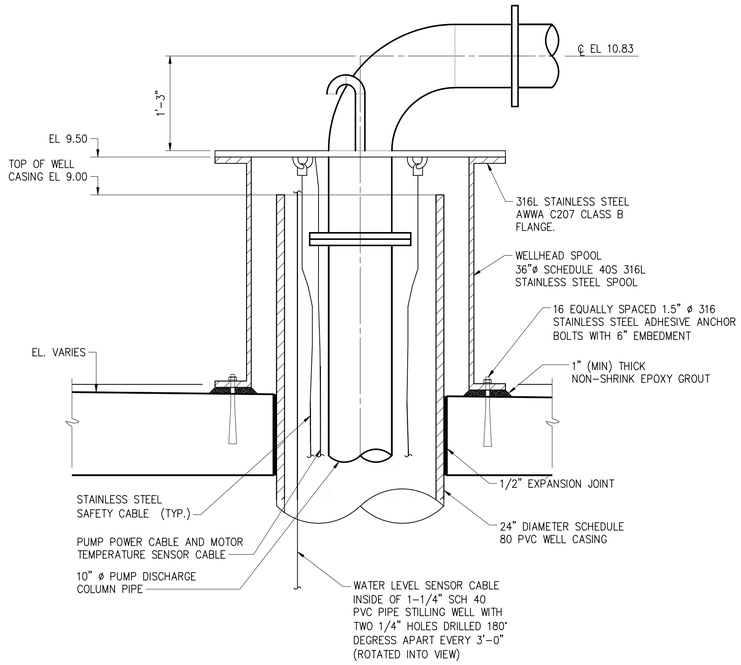
SECTION
1-1/2"=1'-0"
A
–

WELLHEAD NOTES:

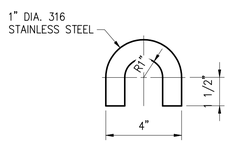
1. ALL MATERIAL SHALL BE ASTM A240 AND/OR ASTM A403 316L STAINLESS STEEL. WELLHEAD FABRICATION SHALL BE PICKLED AND PASSIVATED PER ASTM A380. THE WELLHEAD SHALL HAVE A UNIFORM 2D FINISH.
2. PIPE AND NIPPLES SHALL BE SCHEDULE 40S.
3. WELDERS SHALL BE CERTIFIED BY THE AMERICAN WELDING SOCIETY.
4. ALL OUTLES SHALL HAVE THREADOLETS ABOVE AND BELOW THE FLANGE.
5. FURNISH AND INSTALL NEOPRENE GASKET.

WELLHEAD OUTLET SCHEDULE		
ID MARK	DESCRIPTION	OUTLET DIAMETER
A	VENT PIPE CONNECTION	1.5"
B	SPARE (WITH WATER TIGHT CAP)	2"
C	MOTOR POWER CABLE	4"
D	SPARE (WITH WATER TIGHT CAP)	4"
E	WATER LEVEL SENSOR	1.25"

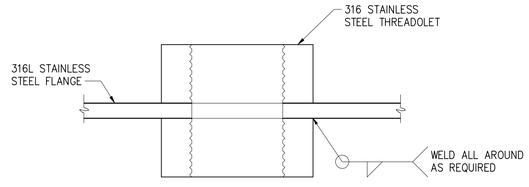
WELLHEAD DISCHARGE
DETAIL 2
1 1/2" = 1'-0" M-01



DETAIL 4
1" = 1'-0" M-02



LIFTING EYE DETAIL
DETAIL 3
3" = 1'-0" –



OUTLET DETAIL – SECTION VIEW
DETAIL 5
NTS –

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown 2020.02.05 12:06:06-05'00'

1"=1'-0" 12" 6 0 1'
1 1/2"=1'-0" 4" 0 1'
3"=1'-0" 2" 0 2 4 6"

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN G.P.B.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE 40612-030BP4-M04

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
MECHANICAL DETAILS – SHEET 2

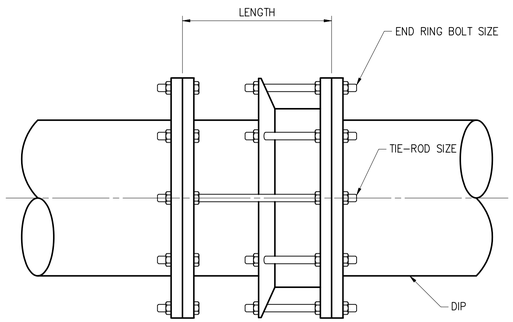
DATE: FEBRUARY 2020
SHEET: 20 OF 42
DRAWING: M-04

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-S01-SP,..\dms49208\PW-S01-MP

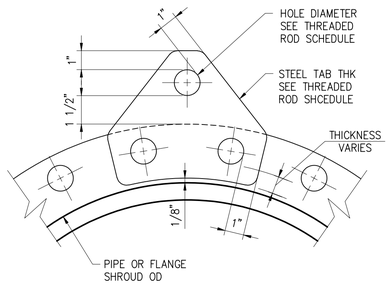
File = C:\bms\hazen-pw\dms49213\40612-030BP4-M04 Saved by tbocas Save date = 1/22/2020 4:28 PM



PIPE SIZE	LENGTH			END RING BOLTS		TIE RODS		
	NOM.	MIN.	MAX.	QTY.	SIZE	SIZE (UNC)	LENGTH	QTY.
4	8.00	7.00	9.00	4	5/8-11	5/8-11	13.50	2
6	8.38	7.38	9.38	4	3/4-10	3/4-10	15.00	2
8	8.38	7.38	9.38	4	3/4-10	3/4-10	15.00	2
10	10.50	9.50	11.50	6	7/8-9	7/8-9	17.75	2
12	10.50	9.50	11.50	6	7/8-9	7/8-9	17.75	2
14	13.50	12.00	15.00	8	5/8-11	1-8	22.00	2
16	13.50	12.00	15.00	10	5/8-11	1-8	22.00	2
18	13.75	12.25	15.25	10	5/8-11	1 1/8-7	23.25	2
20	13.75	12.25	15.25	12	5/8-11	1 1/8-7	23.25	2
24	14.25	12.75	15.75	14	5/8-11	1 1/4-7	25.50	2
30	14.75	13.25	16.25	16	5/8-11	1 1/4-7	25.50	4
36	15.75	14.25	17.25	18	5/8-11	1 1/2-6	27.50	4

DISMANTLING JOINT

DETAIL 6
NTS –

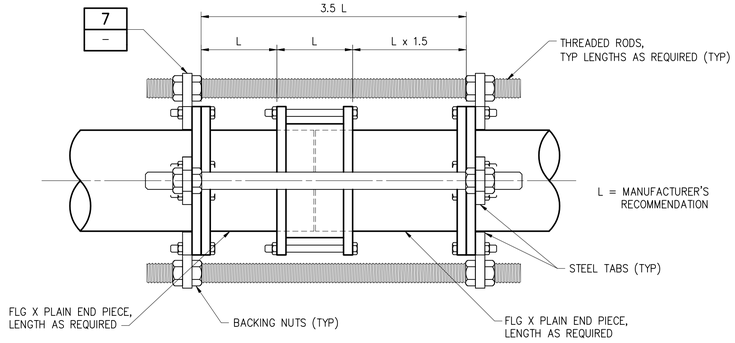


STEEL TAB

DETAIL 7
NTS –

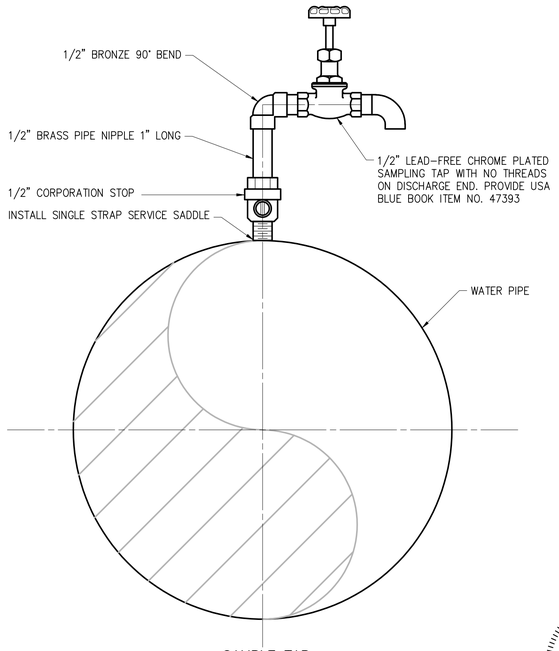
NOTES:

1. ALL FLEXIBLE COUPLINGS SHALL BE HARNESSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION.
2. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.
3. THREADED RODS SHALL BE BOLTED TO TABS ON FLANGED PIPE JOINTS OR DUCTILE IRON HARNESS RING FACTORY WELDED TO PIPE.



HARNESSED MECHANICAL COUPLING

DETAIL 8
NTS –



SAMPLE TAP

DETAIL 9
NTS –

THREADED ROD SCHEDULE

DESIGN PRESSURE (DIMENSIONS IN INCHES)

PIPE SIZE	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		300 PSI		350 PSI	
	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK	RODS NO-DIA	TAB THK
4,6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	8-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	8-3/4	2	10-3/4	2	10-3/4	2
30	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	6-1	2 1/4	8-1	2 1/4	10-1	2 1/4	10-1	2 1/4
36	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	8-1	2 1/2	10-1	2 1/2	12-1	2 1/2	14-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4
48	6-1 1/4	2 3/4	4-1 1/4	2 3/4	8-1 1/4	2 3/4	8-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
54	6-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

1. ASSUME A DESIGN PRESSURE OF 200 PSI.
2. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
3. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
4. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
5. THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED.
6. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 7
7. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNEMEC 46-465 HI-BUILD OR EQUAL.

GEORGE A. BROWN LICENSE No. 56076 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by George A. Brown, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

George A. Brown
2020.02.05 12:06:10-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

GEORGE A. BROWN P.E.
No. 56076

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-M05

Beach
Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

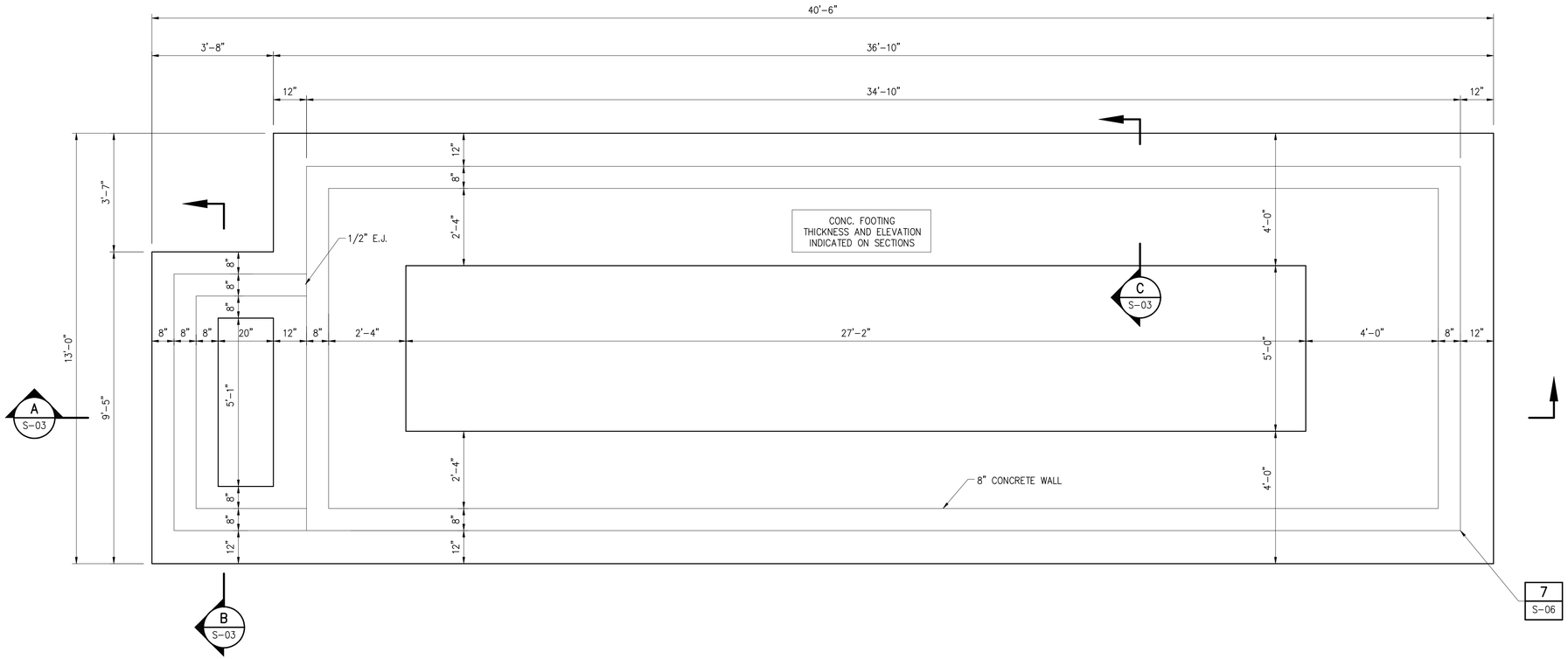
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

MECHANICAL DETAILS – SHEET 3

DATE: FEBRUARY 2020
SHEET: 21 OF 42
DRAWING: M-05

BID SET

File = C:\bms\hazen-pw\dms49213\40612-030BP4-M05 Saved by MNiemiec Save date = 12/12/2019 10:05 AM



PLAN
1/2" = 1'-0"

GENERAL STRUCTURAL NOTES

GENERAL:

1. THE DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT, DESIGN AND EXTENT OF THE WORK. THEY ARE NOT INTENDED TO BE SCALED FOR ROUGH-IN MEASUREMENTS, OR TO SERVE AS SHOP DRAWINGS OR PORTIONS THEREOF.
2. ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE IN THE BUILDING, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.
3. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY ALL GRADES, LINES, LEVELS, DIMENSIONS AND EXISTING CONDITIONS AT THE JOB SITE AND AS SHOWN ON THE DRAWINGS. THEY SHALL REPORT ANY ERRORS OR INCONSISTENCIES IN THE ABOVE TO THE ARCHITECT / ENGINEER BEFORE COMMENCING WORK.
4. THE CONTRACTOR SHALL USE THE STRUCTURAL DRAWINGS TOGETHER WITH ALL OTHER DRAWINGS TO LOCATE DEPRESSED SLABS, SLOPES, DRAINS, OUTLETS, RECESSES, OPENINGS, BOLT SETTING, SLEEVES, DIMENSIONS, ETC. NOTIFY ARCHITECT/ENGINEER OF ANY POTENTIAL CONFLICTS BEFORE PROCEEDING WITH THE WORK.
5. SHOP DRAWINGS:
   SEE TECHNICAL SPECIFICATIONS SECTION 01300.
6. PRECAUTIONS:
   BACKFILL SHALL NOT BE PLACED AGAINST ANY STRUCTURE WALL UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED 28-DAY STRENGTH. THE CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS AND SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES DURING EXCAVATION AND CONSTRUCTION.
7. DO NOT BACKFILL LIQUID RETAINING STRUCTURES BEFORE SUCCESSFUL HYDRAULIC TESTING.

DESIGN:

1. STRUCTURAL DESIGN CRITERIA:
   DESIGN OF STRUCTURES ARE BASED UPON AND GOVERNED BY 2017, 6th EDITION FLORIDA BUILDING CODE, LOCAL CODES, AMERICAN CONCRETE INSTITUTE (ACI 318, ACI 350) PROJECT SPECIFICATIONS, AND OTHER REFERENCE CODES AND SPECIFICATIONS.
2. DEAD LOADS:
   DEAD LOAD ASSUMED IN THE DESIGN ARE BASED ON MATERIALS AS SHOWN ON THE DRAWINGS. ANY CHANGES IN CONSTRUCTION MATERIALS FROM THOSE SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS SHALL BE REPORTED TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF LOAD CARRYING CAPACITY OF THE STRUCTURE PRIOR TO INSTALLATION AND/OR CONSTRUCTION.
3. LIVE LOADS:
   - WELLHEAD SLAB = 150 PSF
   - STAIRS AND LANDINGS = 150 PSF

EXCAVATION AND FOUNDATION:

1. FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF 1,500 PSF AS PER GEOTECHNICAL REPORT SUBMITTED BY NV5, DATED DECEMBER 8, 2015.
2. EXCAVATION AND SUBSURFACE PREPARATION SHALL BE AS SPECIFIED IN SECTION 02224 AND 02224 OF THE SPECIFICATIONS. SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM DI557.

ALL ELEVATIONS IN NAVD 1988

1/2"=1'-0" 12" 0 1 3'

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jean Paul Silva
2020.02.05 15:15:45-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED J.P.S.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-S01

Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

WELLHEAD FOUNDATION PLAN

DATE: FEBRUARY 2020
SHEET: 22 OF 42
DRAWING: S-01

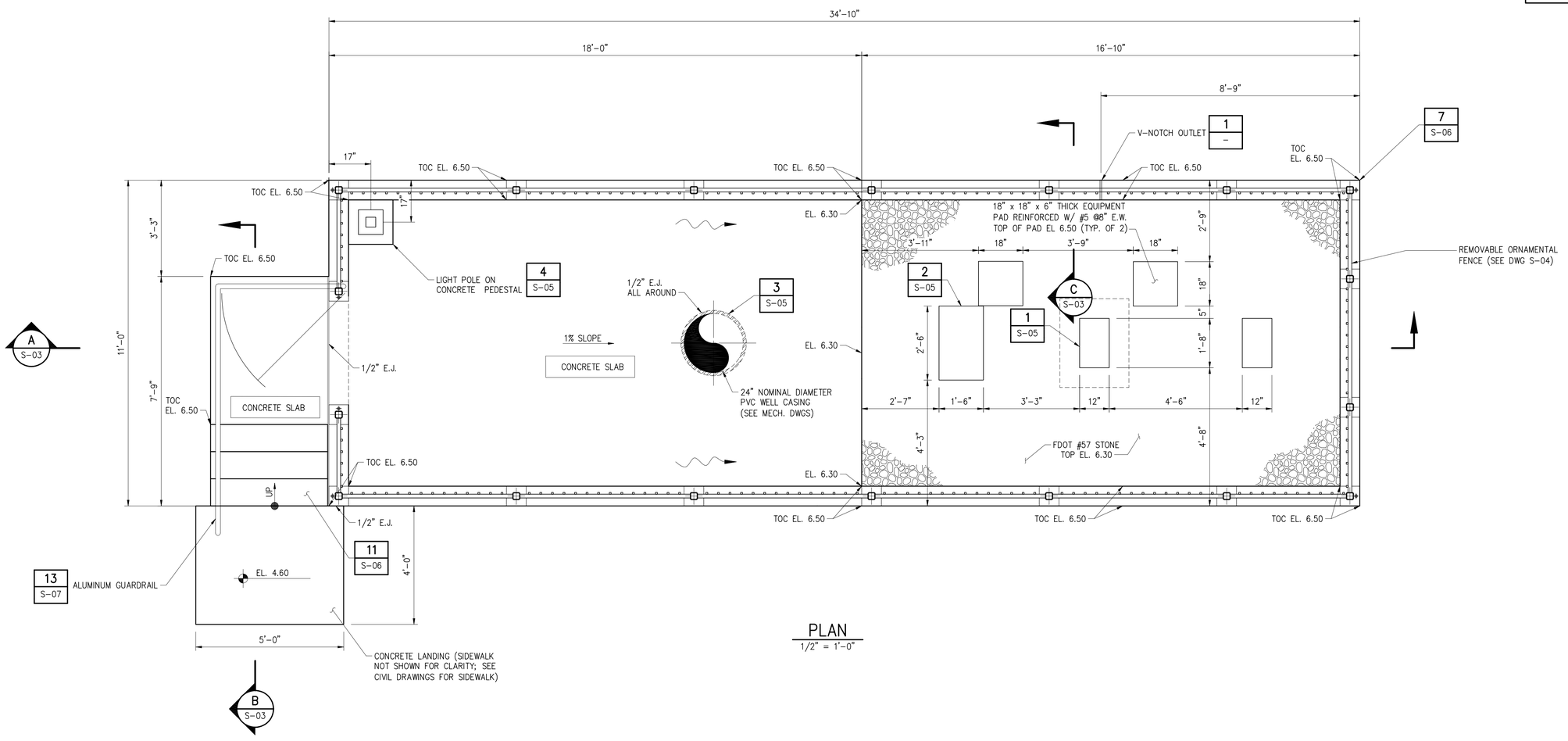
BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

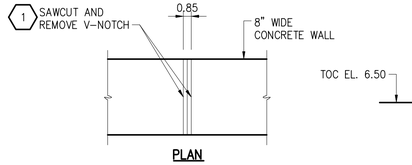
XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-FP-SP

File = C:\bms\hazen-pw\dms49215\40612-030BP4-S01 Saved by tbocas Save date = 1/22/2020 2:11 PM

ALL ELEVATIONS IN NAVD 1988



PLAN
1/2" = 1'-0"



PLAN

ELEVATION

KEYED NOTE:

1 CUT BACK REBAR AND GROUT SMOOTH.

V-NOTCH OUTLET
DETAIL 1
1 1/2" = 1'-0"

1 1/2"=1'-0" 4" 0 1'

1/2"=1'-0" 12" 0 1 3'

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jean Paul Silva
2020.02.05 15:16:03-05'00'

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED J.P.S.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S02

Beach PROSPERITY. INNOVATION. OPPORTUNITY.
Hallandale Beach
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

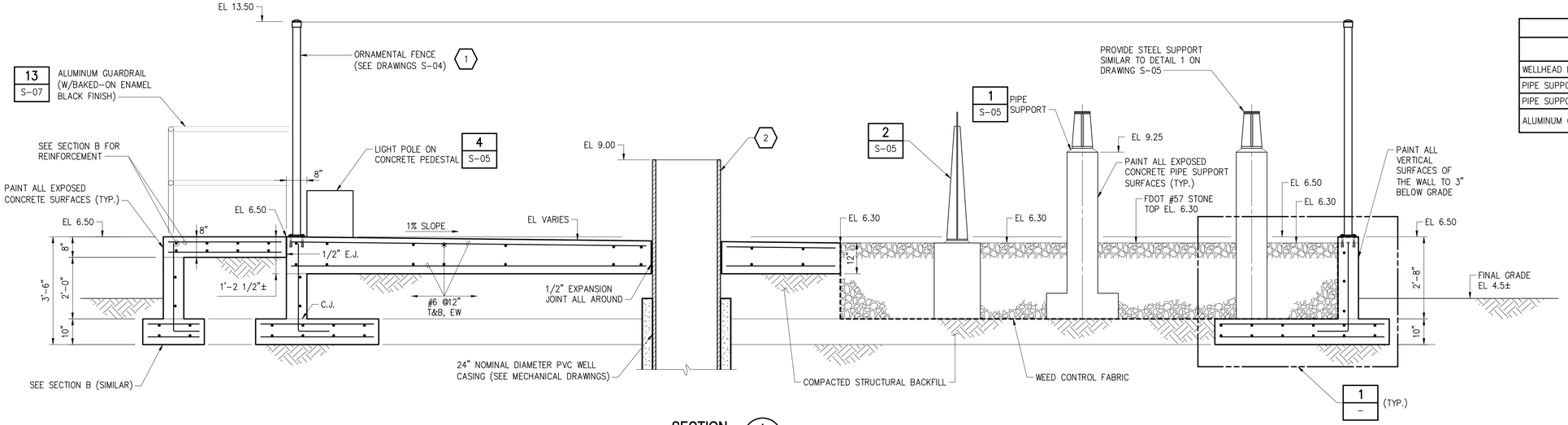
WELLHEAD TOP PLAN

DATE: FEBRUARY 2020
SHEET: 23 OF 42
DRAWING: S-02

BID SET

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-SP,..\dms49208\PW-SF-SP

File = C:\bms\hazen-pw\dms49215\40612-030BP4-S02 Saved by tbocas Save date = 1/31/2020 1:22 PM

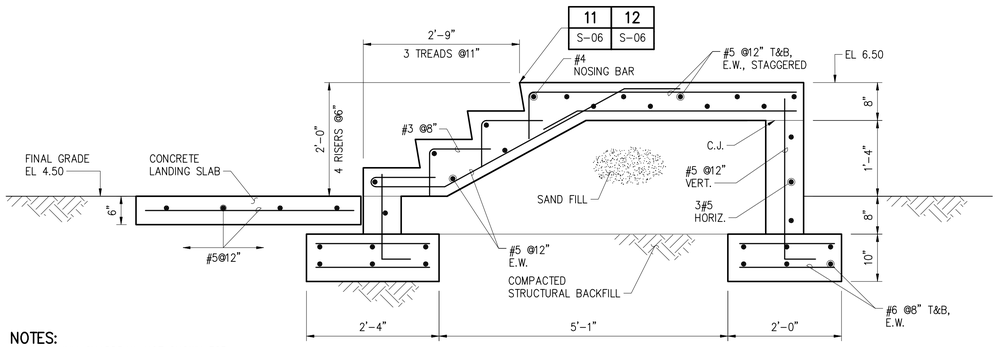


SECTION A
1/2" = 1'-0"
S-02

FINAL COATING SCHEDULE		
ITEM	TNEMEC COLOR NUMBER	COLOR DESCRIPTION
WELLHEAD EXPOSED CONCRETE WALLS	150GN	LIMESTONE
PIPE SUPPORT EXPOSED CONCRETE	150GN	LIMESTONE
PIPE SUPPORT METAL CRADLE	110GN	CLOVER
ALUMINUM GUARDRAIL	N/A	BLACK BAKED-ON ENAMEL

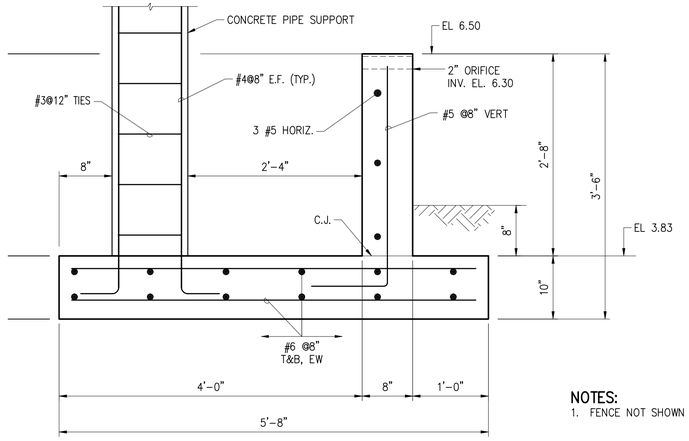
GENERAL NOTES:

1. PLACE STRUCTURAL FILL IN 12" LIFTS AND COMPACT TO 98% OF MAXIMUM DRY DENSITY PER ASTM D1557 STRUCTURAL FILL SHALL BE AASHTO A-2 MATERIAL WITH NO MORE THAN 10% BY WEIGHT PASSING THE No. 200 SIEVE COMPACTION OF EACH LIFT WILL BE VERIFIED BY A TESTING LAB HIRED BY THE OWNER.



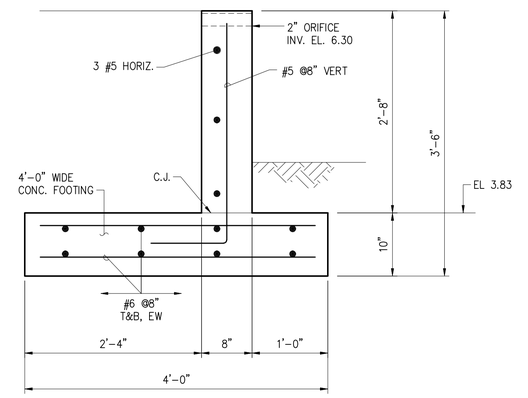
NOTES:
1. ALUMINUM GUARDRAIL NOT SHOWN FOR CLARITY.

SECTION B
3/4" = 1'-0"
S-01



DETAIL 1
1"=1'-0"
–

NOTES:
1. FENCE NOT SHOWN FOR CLARITY.



SECTION C
1"=1'-0"
S-01

KEYED NOTES:

1. ORNAMENTAL FENCE NOT SHOWN IN SECTION VIEW FOR CLARITY.
2. SEE MECHANICAL DRAWINGS FOR WELLHEAD COMPLETION DETAILS.

1"=1'-0" 12" 6 0 1'
3/4"=1'-0" 6" 0 1 2'
1/2"=1'-0" 12" 0 1 3'

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER
This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.
Jean Paul Silva
2020.02.05 15:16:10-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED J.P.S.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S03

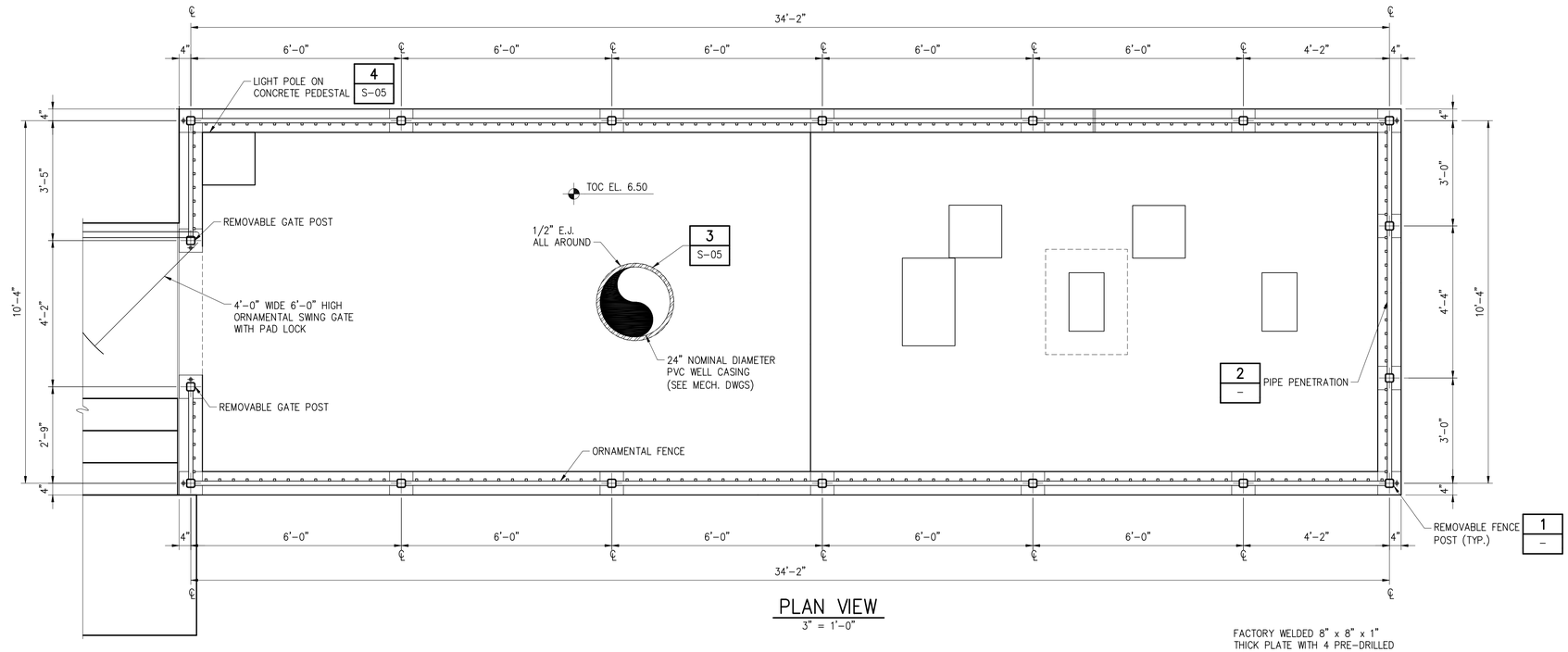
Beach Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
WELLHEAD SECTION

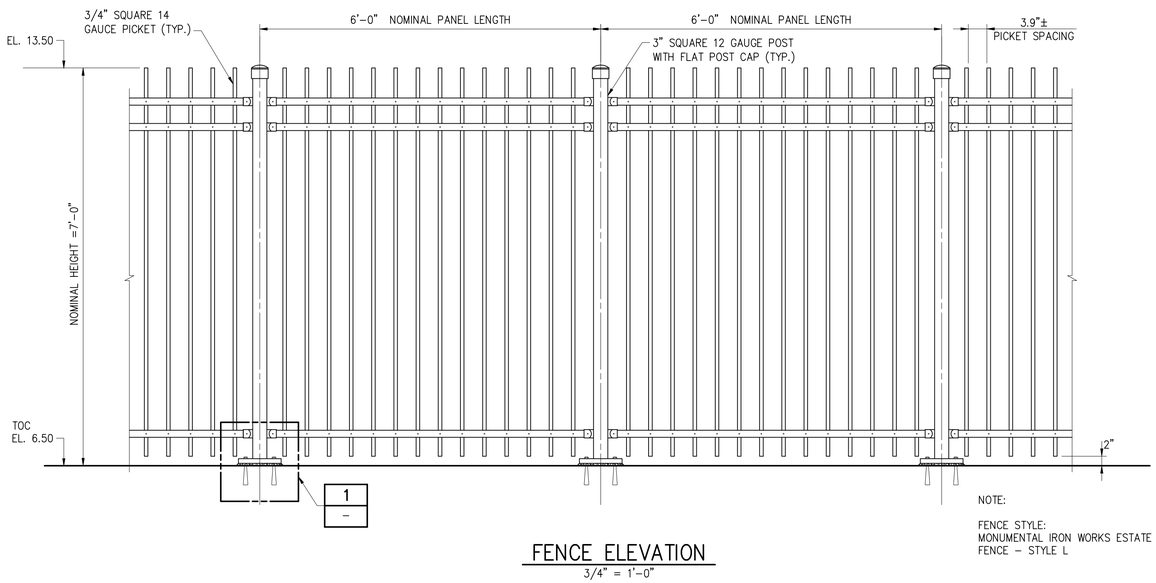
DATE: FEBRUARY 2020
SHEET: 24 OF 42
DRAWING: S-03

BID SET

PLOT DATE: 2/5/2020 9:10 AM BY: TBOCAS
XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-S01-SP
File = C:\bms\hazen-pw\dms49215\40612-030BP4-S03 Saved by tbocas Save date = 1/23/2020 10:45 AM



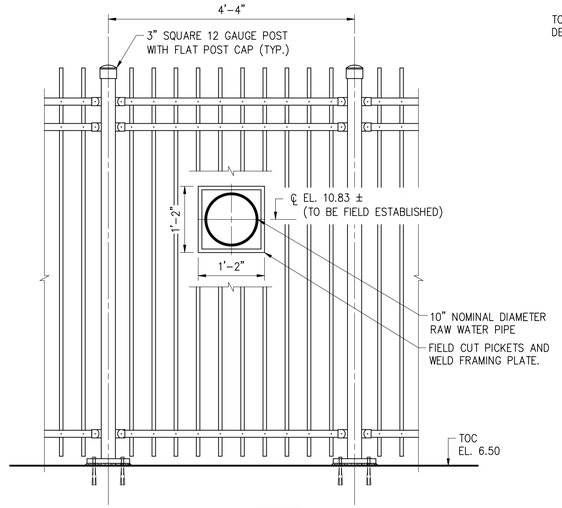
PLAN VIEW
3" = 1'-0"



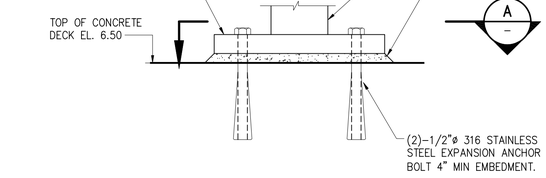
FENCE ELEVATION
3/4" = 1'-0"

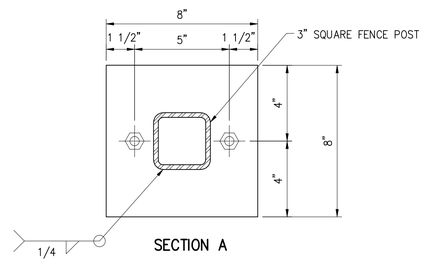
NOTE:

FENCE STYLE:
MONUMENTAL IRON WORKS ESTATE FENCE – STYLE L



DETAIL 2
3/4" = 1'-0"





SECTION A

DETAIL 1
3" = 1'-0"

3"=1'-0" 2" 0 2 4 6"
3/4"=1'-0" 6" 0 1 2'
1/2"=1'-0" 12" 0 1 3'

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

Jean Paul Silva
2020.02.05 15:16:14-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S04

Beach Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

FENCE PLAN, SECTION AND DETAILS

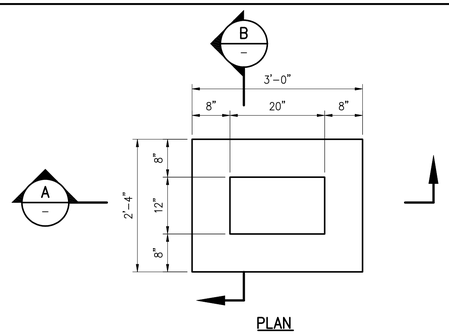
DATE : FEBRUARY 2020
SHEET: 25 OF 42
DRAWING : S-04

BID SET

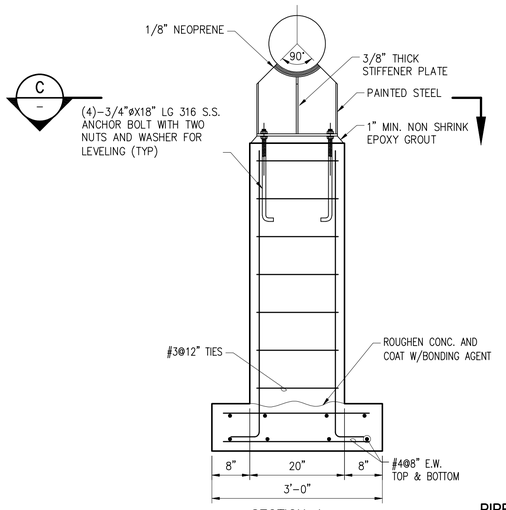
PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-SP,..\dms49208\PW-SF-SP,..\dms49208\PW-PT-EP

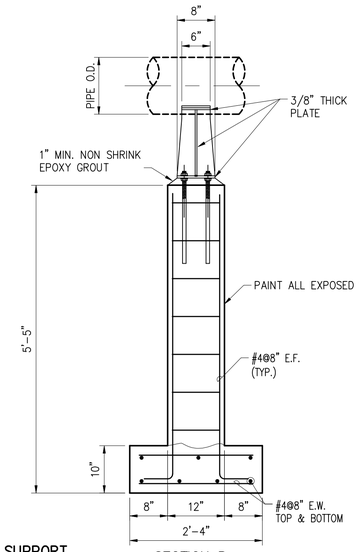
File = C:\bms\hazen-pw\dms49215\40612-030BP4-S04 Saved by tbocas Save date = 1/22/2020 2:47 PM



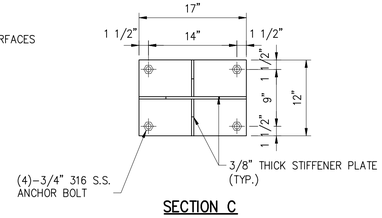
PLAN



SECTION A



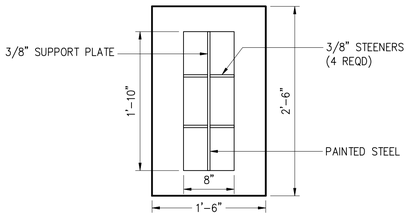
SECTION B



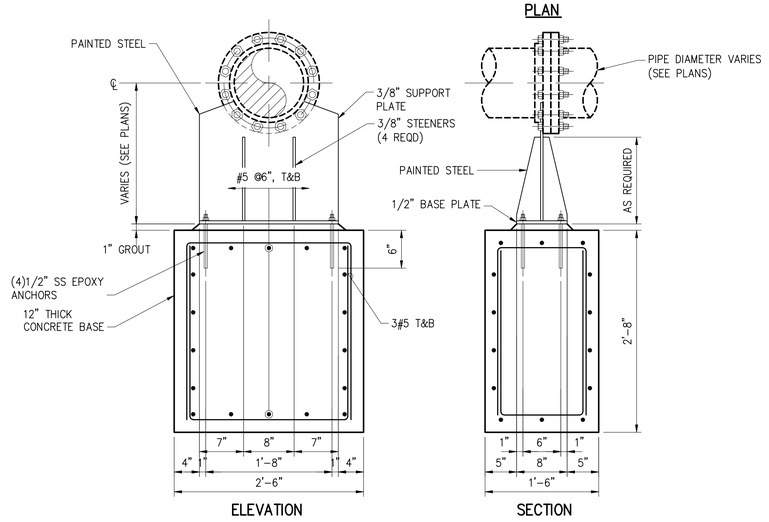
SECTION C

PIPE SUPPORT

DETAIL 1 | NTS | S-02



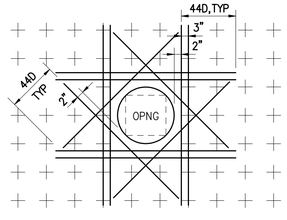
PLAN



ELEVATION SECTION

PAINTED STEEL PIPE SUPPORT AT FLANGE

DETAIL 2 | NTS | S-02



TYPICAL REINF AT OPENINGS

NOTES:

1 THIS DETAIL APPLIES FOR OPENINGS 8"ø AND LARGER. FOR SMALLER OPENINGS, BEND BARS OR ADJUST SPACING OF REINFORCEMENT TO AVOID OPENING.

2 PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENING. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS EXCEPT WHERE NOTED OTHERWISE.

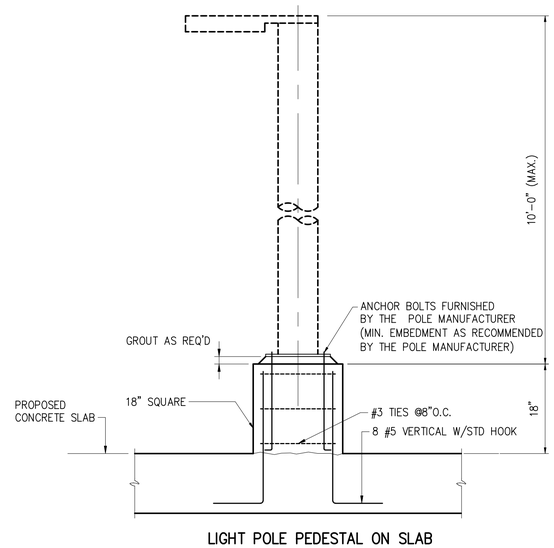
3 PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING WITH SIZE EQUAL TO MAIN REINFORCEMENT, TYPICAL EACH FACE.

4 WHERE INVERT OF OPENING IN WALL IS LESS THAN 44 BAR DIAMETERS FROM TOP OF SLAB, EXTRA REINFORCEMENT ON EACH SIDE SHALL INCLUDE DOWELS EMBEDDED INTO SLAB WITH STANDARD 90 DEGREE HOOKS TO SPLICE WITH EXTRA VERTICAL REINFORCEMENT. DOWELS SHALL ALSO STILL BE PROVIDED BELOW OPENING.

5 WHERE INVERT OF OPENING IN WALL OR SLAB IS CLOSER THAN 44 BAR DIAMETERS TO EDGE OF SLAB OR BOTTOM OF WALL, EXTRA DIAGONAL BARS MAY BE TERMINATED TWO INCHES FROM EDGE OF SLAB OR BOTTOM OF WALL. DOWELS DO NOT HAVE TO BE PROVIDED TO SPLICE WITH DIAGONAL BARS.

TYPICAL REINFORCEMENT AT OPENING

DETAIL 3 | NTS | -



LIGHT POLE PEDESTAL ON SLAB

DETAIL 4 | NTS | S-03

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jean Paul Silva
2020.02.05 15:16:18-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S05

Hallandale Beach PROSPEROUS, INNOVATIVE, OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

STRUCTURAL DETAILS - SHEET 1

DATE: FEBRUARY 2020
SHEET: 26 OF 42
DRAWING: S-05

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-S01-SP

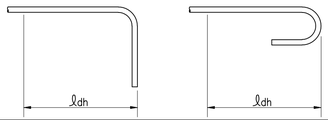
File = C:\bms\hazen-pw\dms49215\40612-030BP4-S05 Saved by tbocas Save date = 1/22/2020 3:16 PM

DEVELOPMENT LENGTH OF STANDARD HOOKS
FOR BARS IN TENSION

fy = 60,000 psi fc' = 4000 psi OR GREATER

BAR SIZE	DEVELOPMENT LENGTH, ℓdh	
	BASIC	W/ CONC COVER *
#3	8"	6"
#4	10"	7"
#5	1'-0"	9"
#6	1'-3"	11"
#7	1'-5"	1'-0"
#8	1'-7"	1'-2"
#9	1'-10"	1'-4"
#10	2'-1"	1'-6"
#11	2'-3"	1'-7"

SIDE COVER NORMAL TO PLANE OF HOOK AT LEAST 2 1/2"; AND FOR 90° HOOK, END COVER BEYOND OUTSIDE END OF HOOK AT LEAST 2".



DETAIL 5
NTS –

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH
FOR BARS IN TENSION

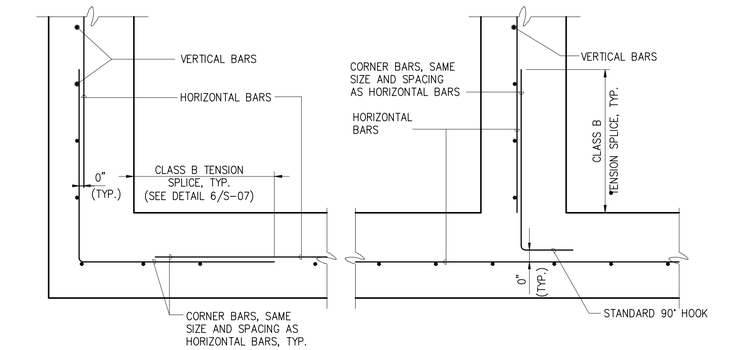
** BASED ON MATERIALS AND CONDITIONS AS FOLLOWS:
fy = 60,000 psi fc' = 4000 psi OR GREATER
UNCOATED BARS NORMAL WEIGHT CONCRETE
CLEAR COVER ≥ 1.5 INCHES

BASIC DEVELOPMENT LENGTH ℓd				BAR SIZE	CLASS B SPLICE LENGTH 1.3 x ℓ d			
CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"			CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"	
BASIC	TOP *	BASIC	TOP *		BASIC	TOP *	BASIC	TOP *
1'-0"	1'-0"	1'-0"	1'-4"	# 3	1'-0"	1'-3"	1'-4"	1'-8"
1'-0"	1'-3"	1'-7"	2'-1"	# 4	1'-3"	1'-8"	2'-1"	2'-9"
1'-3"	1'-7"	2'-4"	3'-0"	# 5	1'-7"	2'-0"	3'-0"	3'-11"
1'-6"	1'-11"	3'-1"	4'-0"	# 6	1'-11"	2'-5"	4'-0"	5'-2"
2'-5"	3'-1"	4'-11"	6'-4"	# 7	3'-1"	4'-0"	6'-4"	8'-3"
3'-0"	3'-11"	6'-0"	7'-9"	# 8	3'-11"	5'-1"	7'-9"	10'-1"
3'-8"	4'-9"	6'-9"	8'-9"	# 9	4'-9"	6'-3"	8'-9"	11'-4"
4'-6"	5'-10"	7'-7"	9'-10"	# 10	5'-10"	7'-7"	9'-10"	12'-9"
5'-5"	7'-0"	8'-5"	10'-11"	# 11	7'-0"	9'-1"	10'-11"	14'-2"

* TOP REINFORCEMENT IS HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

** FOR MATERIALS OR CONDITIONS DIFFERENT FROM THOSE STATED, LENGTHS SHOWN IN CHART SHALL BE MODIFIED TO CONFORM TO THE PROVISIONS OF ACI 318, SECTION 12.2.

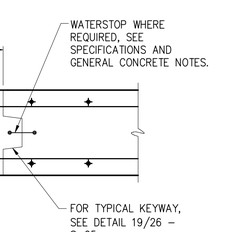
DETAIL 6
NTS –



* = STD 90° HOOK LENGTH

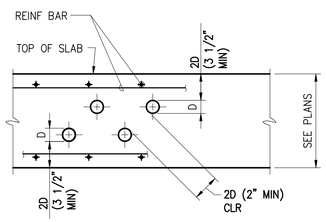
TYPICAL WALL HORIZONTAL WALL OPENING

DETAIL 7
NTS –



TYPICAL CONSTRUCTION JOINT

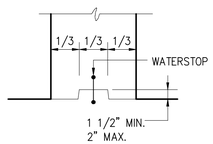
DETAIL 8
NTS –



NOTE:
D DENOTES PIPE OR CONDUIT OD

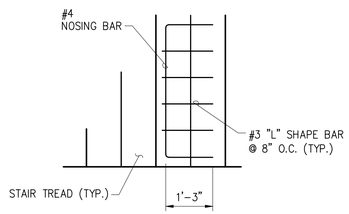
PIPE CONDUIT EMBEDED IN SLAB

DETAIL 9
NTS –



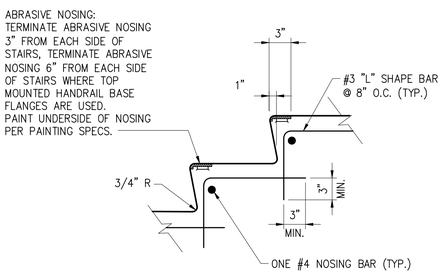
TYPICAL KEYWAY

DETAIL 10
NTS –



TYPICAL STAIR NOSING BAR – PLAN

DETAIL 11
NTS –



SECTION

TYPICAL CONCRETE STAIRS

DETAIL 12
NTS –

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jean Paul Silva
2020.02.05 15:16:23-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN L.M.S.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S06

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

STRUCTURAL DETAILS – SHEET 2

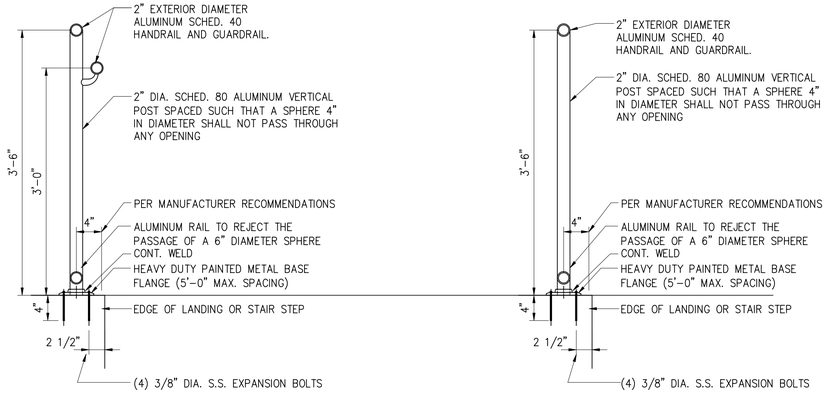
DATE: FEBRUARY 2020
SHEET: 27 OF 42
DRAWING: S-06

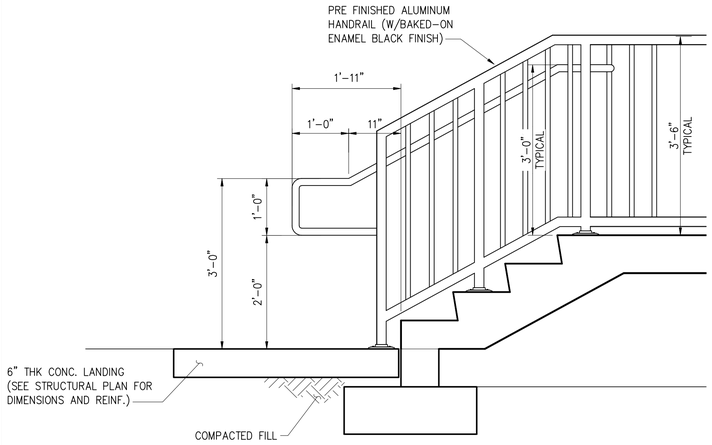
BID SET

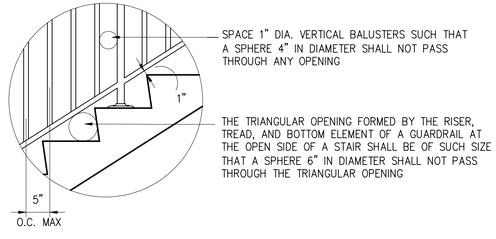
PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49215\40612-030BP4-S06 Saved by tbocas Save date = 1/22/2020 10:15 AM







DETAIL 13
NTS –

JEAN PAUL SILVA LICENSE No. 66522 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jean Paul Silva, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jean Paul Silva
2020.02.05 15:16:27-05'00'

1"=1'-0"

12" 6 0 1'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED G.A.B.
DRAWN G.P.B.
CHECKED J.N.M.
PROJ. ENGR. G.A.B.

JEAN PAUL SILVA P.E.
No. 66522

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-S07

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

STRUCTURAL DETAILS – SHEET 3

DATE: FEBRUARY 2020
SHEET: 28 OF 42
DRAWING: S-07

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-S01-SP

File = C:\bms\hazen-pw\dms49215\40612-030BP4-S07 Saved by tbocas Save date = 12/12/2019 10:06 AM

ELECTRICAL PLAN/LAYOUT

SYMBOL	DESCRIPTION
TTC	TELEPHONE TERMINAL CABINET
	TERMINAL JUNCTION BOX
	ELECTRICAL EQUIPMENT
X	CEILING MOUNTED DOWNLIGHT LUMINAIRE – SEE SCHEDULE FOR TYPE
X	FLOURESCENT LUMINAIRE, SURFACE OR LAY IN TYPE SEE SCHEDULE FOR TYPE
X	LUMINAIRE AND POLE – SEE SCHEDULE FOR TYPE
X	WALL MOUNTED LUMINAIRE – SEE SCHEDULE FOR TYPE
X	FLOOD LIGHTS – AIM IN THE DIRECTION SHOWN SEE SCHEDULE FOR TYPE
X	EXIT LIGHTS – SOLID SECTION IS DIRECTION OF FACE SEE SCHEDULE FOR TYPE
X	EMERGENCY LIGHT WITH BATTERY PACK SEE SCHEDULE FOR TYPE
LWx	EXTERIOR WALL PACK LIGHTING FIXTURES SEE SCHEDULE FOR TYPE AND DETAILS
X Y Z (TYP)	X=FIXTURE TYPE, Y=CIRCUIT, Z=SWITCH; IF NO Z, CONNECT DIRECTLY TO CIRCUIT BREAKER.
OS	LIGHTING OCCUPANCY SENSOR
WIFI	WIRELESS INTERNET EQUIPMENT
[B2] LPA–2	(ALTERNATE METHOD) CONDUIT/CONDUCTOR – REFER TO CIRCUIT SCHEDULE
LPA–2	HOME RUN – PANEL AND CIRCUIT NUMBER SHOWN
	EXPOSED CONDUIT AND CONDUCTORS*
	UNDERGROUND CONDUIT AND CONDUCTORS* NOTE: * ALL UNMARKED CONDUIT RUNS CONSIST OF 3/4"C, 3#12, 1#12G.
YCX	YARD CONDUIT – REFER TO YARD CONDUIT SCHEDULE
DB	DIRECT BURIED CONDUIT
	CONDUIT, STUBBED AND CAPPED AS SHOWN
GND	GROUND WIRE, 4/0 UNLESS OTHERWISE NOTED
	6 FOOT GROUND WIRE PIGTAIL, 4/0 UNLESS OTHERWISE NOTED
	GROUND ROD – LENGTH AS SPECIFIED
	GROUND ROD IN TEST WELL
S	WALL SWITCH: 2– DOUBLE POLE, 3– THREE WAY, 4– FOUR WAY, WP– WEATHERPROOF, P– PILOT LIGHT, K– KEY OPERATED, D– DIMMER, CRE– CORROSION RESISTANT
TYPE #	CONVENIENCE RECEPTACLE – 20A DUPLEX UNLESS OTHERWISE SPECIFIED: WP – WEATHERPROOF CORROSION RESISTANT WITH FULL TIME COVER TL–TWIST LOCK GFI–GROUND FAULT INTERRUPTER
TYPE #	CONVENIENCE RECEPTACLE – 20A QUADROPLEX UNLESS OTHERWISE SPECIFIED
TYPE #	SPECIAL PURPOSE RECEPTACLE
	CONVENIENCE RECEPTACLE – 20A DUPLEX UNLESS SPECIFIED OTHERWISE. MOUNTED FLUSH IN FLOOR.
	TELEPHONE/DATA RECEPTACLE (OUTLET BOX, 18" AFF) W – WALL MOUNTED, 54" AFF
	TELEPHONE/DATA RECEPTACLE MOUNTED FLUSH IN FLOOR
J	JUNCTION BOX NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. 4X = NEMA 4X SS
TV	SECURITY CAMERA
	PROGRAMMABLE LOGIC CONTROLLER (PLC)

SYMBOL	DESCRIPTION
FIRE ALARM SYSTEM LEGEND ON DRAWING E–27	
FIELD INSTRUMENTS ANNOTATION	
XXX 000	PS or SOURCE WHERE APPLICABLE

ACCESS CONTROL SYSTEM	
MAG	MAGNETIC DOOR LOCK
CR	CARD READER
PTO	PUSH TO OPEN BUTTON
COM	INTERCOM

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
A	AMMETER, AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AS	AMMETER SWITCH, AMPERE SENSOR
ASU	AIR SUPPLY UNIT
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
BRKR	BREAKER
C	CONDUIT, CONTACTOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CMS	COMBINATION MOTOR STARTER
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DIV	DIVISION
DS	DISCONNECT SWITCH
E.C.	EMPTY CONDUIT
EF	EXHAUST FAN
EG	ELECTRICAL GROUND
ETM	ELAPSED TIME METER
EXST	EXISTING
FDR	FEEDER
F, FU	FUSE
FI	FLOW INDICATOR
FLR	FLOOR
FLUOR	FLUORESCENT
FM	FLOW METER
FS	FLOAT SWITCH, FLOW SWITCH
FT	FLOW TRANSMITTER
FUT	FUTURE
FVNR	FULL VOLTAGE NON–REVERSING STARTER
G	GREEN, GROUND
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND/OFF/AUTO
HOR	HAND/OFF/REMOTE
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATING & AIR CONDITIONING
IC	INTERRUPTING CAPACITY
I & C	INSTRUMENTATION AND CONTROL
INST	INSTANTANEOUS
IP	INSTRUMENT PANEL (PANELBOARD)
J, J–BOX	JUNCTION BOX
K	KEY INTERLOCK
KK	KIRK KEY INTERLOCK
LA	LIGHTNING ARRESTER
LC	LIGHTING CONTACTOR
LP	LIGHTING PANEL (PANELBOARD)
LR	LOCAL/REMOTE, LATCHING RELAY
LS	LIMIT SWITCH
LT FLEX	LIQUID TIGHT FLEX CONDUIT
LTG	LIGHTING
M	MAGNETIC CONTACTOR COIL OR MOTOR
MA	MILLIAMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MERC	MERCURY VAPOR
MH	MOTOR HEATER, MANHOLE
MLO	MAIN LUGS ONLY
MPZ	MINI POWER ZONE
MS	MOTOR STARTER
MSC	MANUFACTURER SUPPLIED CABLE
MT	MOUNT
MTD	MOTOR TEMPERATURE DETECTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEMA	NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION
NF	NON–FUSED
NO	NORMALLY OPEN
NP	NAMEPLATE
NTS	NOT TO SCALE
OL	OVERLOAD RELAY
P	POLE
PB	PULL BOX
PC	PHOTOCELL
PH	PHASE
PM	PHASE MONITOR,POWER METER
PNL	PANEL
PP	POWER PANEL (480VAC)
PR	PAIR
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
RCPT	RECEPTACLE
RMS	ROOT MEAN SQUARE
RS	RIGID STEEL CONDUIT
RGS	RIGID GALVANIZED STEEL CONDUIT
RTU	REMOTE TELEMETRY UNIT
SC	SURGE CAPACITOR
SF	SUPPLY FAN
SH	SPACE HEATER
S/N	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE, AKA TVSS
SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
SST	STAINLESS STEEL
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
T	THERMOSTAT
TB	TERMINAL BOARD
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TS	THERMAL SWITCH
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UVR	UNDER VOLTAGE RELAY
V	VOLTMETER, VOLT
VFD	VARIABLE FREQUENCY DRIVE
VS	VOLTMETER SWITCH
W	WATT
WHD	WATTHOUR DEMAND METER
WP	WEATHERPROOF
XFMR	TRANSFORMER

ONE LINE DIAGRAMS, RISER DIAGRAMS AND SCHEMATICS

SYMBOL	DESCRIPTION
5	MOTOR SQUIRREL CAGE INDUCTION UNLESS OTHERWISE NOTED – HORSEPOWER INDICATED
	OVERLOAD RELAY HEATER
1	MAGNETIC STARTER WITH NEMA SIZE INDICATED
MCP	MOTOR CIRCUIT PROTECTOR, MAGNETIC, 3 POLE UNLESS INDICATED OTHERWISE.
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
100	SWITCH – CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
600AF 400AT	DRAWOUT CIRCUIT BREAKER, LOW VOLTAGE 600= FRAME RATING, 400=TRIP SETTING
600AF 400AT	DRAWOUT CIRCUIT BREAKER, MEDIUM VOLTAGE 600= FRAME RATING, 400=TRIP SETTING
600 400	DRAWOUT FUSED SWITCH, LOW OR MEDIUM VOLTAGE 600= FRAME RATING, 400=FUSE RATING
(3)	CURRENT TRANSFORMER, NUMBER OF WINDINGS INDICATED
480–208Y/120V 15 KVA, 3ø K–4 RATED	TRANSFORMER, VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE
	LIGHTNING ARRESTER
	CAPACITOR OR SURGE CAPACITOR
M	UTILITY METER
G	GENERATOR
X 0–600V	METER SCALE RANGE SHOWN IF REQUIRED A – AMPS, V – VOLTS, PM – PHASE MONITOR, P – POWER METER
	FUSE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
	GROUND
CPT 120V	CONTROL TRANSFORMER
GFR	GROUND FAULT RELAY WITH C.T.
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
	PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK
	REMOTE DEVICE
A	INDICATING LIGHT – LETTER INDICATES COLOR A – AMBER, B – BLUE, C – CLEAR, G – GREEN, R – RED, W – WHITE

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke 2020.02.05 12:08:52-05'00'

SYMBOL	DESCRIPTION
S M	MANUAL MOTOR STARTER SWITCH, NEMA 4X UNLESS OTHERWISE NOTED. NUMBER OF POLES AS REQUIRED
PB 4X	PUSH–BUTTON STATION, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. 4X = NEMA 4X STAINLESS STEEL ENCLOSURE. SEE CONTROL DIAGRAMS FOR TYPE PUSH BUTTON REQUIRED
30 4X	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, 4X = NEMA 4X STAINLESS STEEL
F 60 40 4X	FUSED DISCONNECT SWITCH, SIZE INDICATED (60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, 4X = NEMA 4X STAINLESS STEEL
LC 30 4X	LIGHTING CONTACTOR, CURRENT RATING INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM FOR NUMBER OF POLES. 4X = NEMA 4X STAINLESS STEEL
2 4X	MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE, UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM. 4X = NEMA 4X STAINLESS STEEL
2 4X	COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED). MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL SCHEMATIC DIAGRAM. 4X = NEMA 4X STAINLESS STEEL
	ELECTRIC RESISTANCE HEATER
ETM	ELAPSED TIME METER
CRX	CONTACT – NORMALLY OPEN WITH COIL INDICATED
CRX	CONTACT – NORMALLY CLOSED WITH COIL INDICATED
CRX	CONTROL RELAY, X=SEQUENTIAL NUMBER
LRX (L)	LATCHING RELAY, X=SEQUENTIAL NUMBER L – LATCH, U – UNLATCH
TDX NOTC	TIME DELAY RELAY, X=SEQUENTIAL NUMBER NOTC=NORMALLY OPEN TIMED CLOSED NOTO=NORMALLY OPEN TIMED OPEN AFTER CLOSE NCTO=NORMALLY CLOSED TIMED OPEN NCTC=NORMALLY CLOSED TIMED CLOSED AFTER OPEN
	TEMPERATURE
	OPENS ON RISING TEMPERATURE, CLOSES ON FALLING TEMPERATURE
	CLOSES ON RISING TEMPERATURE, OPENS ON FALLING TEMPERATURE
H O A XOO OOX	SELECTOR SWITCH: MAINTAINED CONTACT WITH CONTACT POSITION INDICATED, CHART IDENTIFIES OPERATION

	POSITION		
CKT.	HAND	OFF	AUTO
1	X	O	O
2	O	O	X

X – CLOSED CONTACT
O – OPEN CONTACT

GENERAL

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION.
3/4"C, 2#12, 1#12G 1"C, 1–25/C TYPE 1	INDICATES RACEWAY AND CIRCUIT CONDUCTORS. FIRST NUMBER IS RACEWAY SIZE. THE FOLLOWING NUMBERS ARE THE CONDUCTOR QUANTITIES, SIZES, AND TYPES.
	DEMOLITION TO BE REMOVED OR DELETED
LINE WEIGHT	NEW EXISTING FUTURE

NOTE:
THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS THAT APPEAR ON THIS SHEET MAY NOT BE UTILIZED ON PROJECT.

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE: 40612–030BP4–E01

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

ELECTRICAL LEGEND AND SYMBOLS

DATE: FEBRUARY 2020
SHEET: 29 OF 42
DRAWING: E–01

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49210\40612–030BP4–E01 Saved by jbrood Save date = 8/8/2019 2:30 PM

GENERAL NOTES AND SPECIFICATIONS:

1. THE SCOPE OF WORK SHALL BE AS DESCRIBED IN SPECIFICATION SECTION 16010.

2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO INSTALL THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.

3. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MINIMUM FOLLOWING STANDARDS AND CODES:

   3.1. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

   3.2. NATIONAL ELECTRICAL CODE (NEC), (NFPA 70 2011 EDITION)

   3.3. NATIONAL ELECTRICAL SAFETY CODE, (NFPA 70E 2012 EDITION)

   3.4. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 72, 2012 EDITION)

   3.5. STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES, (NFPA 820 2012 EDITION)

   3.6. OTHER NFPA CODES AS APPLICABLE

   3.7. FLORIDA BUILDING CODE (FBC 2014 EDITION)

   3.8. FLORIDA FIRE PREVENTION CODE (FFPC 2012)

   3.9. LOCAL CODES, CITY CODES REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

   3.10. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

   3.11. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

   3.12. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

   3.13. INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

   3.14. OCCUPATIONAL SAFETY AHD HEALTH ACT (OSHA)

   3.15. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

   3.16. UNDERWRITERS LABORATORIES (UL) LISTING AND LABELING FOR ALL MATERIALS AND EQUIPMENT WHERE APPLICABLE STANDARDS EXIST

4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS AND TO INCLUDE ALL FEES AS PART OF HIS BID IF NOT OTHERWISE NOTED.

5. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ENGINEER AND OWNER.

6. THE CONTRACTOR SHALL, BEFORE SUBMITTING HIS BID, VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.

7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL LOCAL UTILITIES, INCLUDING THE POWER AND TELEPHONE UTILITIES TO MEET ALL OF THEIR INSTALLATION REQUIREMENTS. ALL FEES, LABOR, EQUIPMENT OR MATERIALS NECESSARY TO MEET THESE REQUIREMENTS IS TO BE INCLUDED IN THE BID. THE CONTRACTOR SHALL OBTAIN, DELIVER AND INSTALL ALL CONDUITS, PULL-BOXES AND EQUIPMENT AS REQUIRED BY THE UTILITIES TO THEIR SPECIFICATIONS. THE TELEPHONE UTILITY REPRESENTATIVE IS THE CITY'S TELEPHONE CONTRACTOR.

8. ALL EQUIPMENT AND MATERIAL SHALL BE UNUSED AND U.L. LISTED. ALL REFERENCES TO A PARTICULAR MANUFACTURER ARE GIVEN ON AN "APPROVED EQUAL" BASIS.

9. THE CONTRACTOR IS RESPONSIBLE TO TEST ALL SYSTEMS INSTALLED OR MODIFIED UNDER THIS PROJECT AND REPAIR OR REPLACE ALL DEFECTIVE WORK TO THE SATISFACTION OF THE ENGINEER AND OWNER.

10. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE.

11. ALUMINUM CONDUCTORS SHALL NOT BE USED FOR THIS PROJECT.

12. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ELECTRICAL & CONTROL EQUIPMENT AND MATERIAL.

13. ALL CONTROL PANELS SHALL BE CONSTRUCTED BY A UL 508A APPROVED PANEL VENDOR AND SHALL BEAR A UL 508A LABEL ON THE PANEL.

14. THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. THESE ARE TO BE COORDINATED WITH THE OTHER TRADES SO THAT CONFLICTS ARE AVOIDED PRIOR TO INSTALLATIONS.

15. ALL LOCATIONS OF EQUIPMENT, PANELS ETC. ARE SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL VERIFY AND COORDINATE EXACT LOCATION AND SIZE WITH ALL SUBCONTRACTORS AND EQUIPMENT SUPPLIERS PRIOR TO ANY INSTALLATION AND THEN INSTALL AS SUCH WITH CORRESPONDING CONDUIT STUB-UPS.

16. SEE OTHER DISCIPLINE DRAWINGS FOR COORDINATION OF ALL DRAWINGS. ANY CONFLICTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION AND MOVEMENT OF CONDUITS OR OTHER ELECTRICAL EQUIPMENT SHALL BE ACCOMPLISHED WITHOUT ANY ADDITIONAL COST FOR THE OWNER.

17. LOCATIONS OF MANHOLES, HANDHOLES AND PULL BOXES ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH EXISTING AND NEW PIPING OR CONDUIT AND ADJUST ACCORDINGLY.

18. NOT ALL CONDUITS SHOWN ON RISER AND ONE-LINE DIAGRAMS ARE SHOWN ON BUILDING LAYOUTS. CONTRACTOR SHALL SUPPLY ALL CONDUITS AND CABLES AS SHOWN ON RISERS AND ONE-LINE DIAGRAMS.

19. ALL CIRCUITS SHALL BE IDENTIFIED IN JUNCTION BOXES, PULL BOXES, CONTROL PANELS, PANELBOARDS, LIGHTING POLES, CONTROLLERS AND SERVICE POINTS. IDENTIFICATION SHALL MATCH PANELBOARD SCHEDULES.

20. EXPOSED RUNS OF CONDUITS SHALL BE INSTALLED WITH RUNS PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS, WITH RIGHT ANGLE TURNS CONSISTING OF SYMMETRICAL BENDS OR PULL BOXES AS INDICATED ON THE DRAWINGS. BENDS AND OFFSETS SHALL BE AVOIDED WHERE POSSIBLE.

21. INSTRUMENTATION IS LOW VOLTAGE SIGNALS SUCH AS 4-20MA, TELEPHONE COMMUNICATION, FIRE ALARM COMMUNICATION. POWER CONDUIT SHALL ONLY CROSS INSTRUMENTATION CONDUIT PERPENDICULARLY AT RIGHT ANGLES WITH 6" SEPARATION.

22. CONDUCTOR PULLING TENSIONS SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATION. CONTRACTOR SHALL INSTALL PULL BOXES TO MEET MANUFACTURER'S REQUIREMENTS.

23. MINIMUM DISTANCE ALLOWED BETWEEN PARALLEL RUNS OF POWER CONDUITS AND INSTRUMENTATION CONDUITS, WHETHER IN CONCRETE ENCASED DUCT BANKS OR DIRECT BURIED SHALL BE:

VOLTAGE	DISTANCE
4160V	3 FT
480V	2 FT
120V	1 FT

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUIT AND WIRING INSTALLATION FOR ALL VENDOR PROVIDED EQUIPMENT (PACKAGE SYSTEMS). IF THE SHOP DRAWINGS DIFFER FROM THE DESIGNED FACILITIES, THE CONTRACTOR SHALL REDESIGN THE FACILITIES AND SUBMIT THE REVISED DESIGN FOR THE ENGINEER'S APPROVAL ALONG WITH THE SHOP DRAWINGS. THERE SHALL BE NO ADDITIONAL COST TO THE OWNER FOR THE REDESIGN NOR FOR ANY ADDITIONAL CONDUITS AND WIRING. DURING SUBMITTAL THE CONTRACTOR SHALL VERIFY ALL SUPPLIED BREAKER SIZES FOR ALL PACKAGED SYSTEMS SUCH AS HVAC, EXHAUST FANS, MIXERS, CHEMICAL PUMPS ETC. AND MODIFY ALL BREAKERS IN MCC'S AND PANELBOARDS ACCORDINGLY WITHOUT ANY ADDITIONAL COST TO THE OWNER.

25. ALL EXCAVATIONS FOR CONDUITS, HANDHOLES, MANHOLES AND PULLBOXES NEAR EXISTING PIPING, CONDUIT AND EQUIPMENT SHALL BE HAND EXCAVATED AND COORDINATED WITH PLANT ENGINEER.

26. MINIMUM DEPTH FROM TOP OF DUCT BANKS OR CONDUITS TO FINISHED GRADE SHALL BE 24" UNLESS OTHERWISE NOTED.

27. RED WARNING TAPE 6" WIDE SHALL BE INSTALLED 8" BELOW FINISHED GRADE DIRECTLY ABOVE ALL UNDERGROUND YARD CONDUITS

28. CONTRACTOR SHALL RESTORE SIDEWALKS, ROADWAYS, SOD AND SPRINKLER SYSTEM PIPING TO MATCH EXISTING, AFTER THE COMPLETION OF THE CONDUIT AND PULLBOX INSTALLATION.

29. GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH NEC, ARTICLE 250. THE GROUNDING SYSTEM TEST SHALL NOT EXCEED A 48 HOUR SPAN DRY RESISTANCE OF 10 OHMS. ADDITIONAL GROUNDING TO MEET THIS REQUIREMENT SHALL BE INSTALLED AT NO EXTRA COST. GROUNDING AND BONDING CONNECTIONS SHALL NOT BE PAINTED. ALL GROUNDING CONNECTIONS SHALL BE EXOTHERMIC UNLESS SPECIFICALLY INDICATED OTHERWISE.

30. AN EQUIPMENT GROUND WIRE SIZED PER NEC SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER AND CONTROL, WHETHER OR NOT INDICATED ON THE PLANS.

31. ALL ENCLOSURES, TJB, WIREWAY, PULL BOXES ETC. SHALL CONTAIN A GROUNDING BUS. CONNECT ALL RACEWAY BONDS TO THIS BUS VIA GROUNDING BUSHING AND EXTEND BONDING JUMPER FROM THIS BUS TO THE ENCLOSURE.

32. THE POWER AND SIGNAL SIDES OF ALL EXTERIOR INSTALLED INSTRUMENTATION SHALL HAVE SURGE PROTECTION AND SHALL BE GROUNDED TO A SEPARATE GROUND ROD AT THE INSTRUMENT.

33. INSTRUMENTATION GROUND SHALL BE A #6 AWG COPPER CONNECTED TO THE GROUND GRID OR CONNECTED TO A DRIVEN GROUND. #6 GROUND WIRE SHALL BE INSTALLED IN CONDUIT WHERE EXPOSED. GROUND RODS SHALL BE 5/8" OR 3/4" BY A MINIMUM OF 20' IN LENGTH, AS INDICATED ON THE DRAWINGS.

34. CONTRACTOR SHALL INSTALL A SWITCH TO DISCONNECT POWER AT EACH FOUR WIRE INSTRUMENT.

35. CONTRACTOR SHALL CORE DRILL EXISTING CONCRETE WALLS, FLOORS, MANHOLES, HAND HOLES AND PULL BOXES FOR CONDUIT PENETRATIONS. SEAL PENETRATIONS WITH NON-SHRINK GROUT OR APPROPRIATE FIRE RATED DEVICES WHERE APPLICABLE.

36. ALL CONDUITS PENETRATING RATED FIRE WALLS OR RATED FIRE FLOORS SHALL BE INSTALLED WITH U.L. APPROVED DEVICES AND OR FIRE RATED SEALING COMPOUND TO MAINTAIN THE FIRE RATING OF THE WALL OR FLOOR PENETRATED.

37. PROVIDE CONDUIT DUCT SEAL AT ALL CONDUIT ENDS.

38. ALL SPARE, ABANDONED, OR EMPTY CONDUITS SHALL BE SEALED WITH A CAP AT BOTH ENDS AND A PULL STRING INSTALLED WITH IDENTIFICATION OF OTHER END LOCATION AT BOTH ENDS.

39. ALL RECEPTACLES SHALL BE INSTALLED 18" AFF UNLESS OTHERWISE NOTED. LIGHT SWITCHES SHALL BE MOUNTED 48" AFF UNLESS OTHERWISE NOTED.

40. ALL RECEPTACLES WITHIN 6' OF A SINK SHALL BE GFI.

41. FLEXIBLE CONDUITS SHALL BE USED TO TERMINATE ALL MOTORS AND OTHER VIBRATING EQUIPMENT AND SHALL BE BETWEEN 18" AND 36" IN LENGTH.

42. TYPEWRITTEN AND LAMINATED PANEL SCHEDULES SHALL BE INSTALLED IN EACH PANELBOARD, AND TYPEWRITTEN TERMINAL BLOCK SCHEDULES IN EACH CONTROL CABINET.

43. SURGE PROTECTION DEVICES (SPD AKA TVSS) SHALL BE INTEGRAL TO NEW EQUIPMENT SHOWN AND SUPPLIED AS ONE UNIT AND ONE UL ENTITY.

44. CONTRACTOR SHALL PROVIDE AS PART OF THE ELECTRICAL SUBMITTAL, A LAYOUT OF THE ELECTRICAL ROOM SHOWING SIZES OF ALL EQUIPMENT INCLUDING LIGHTING, AND HVAC WITH THEIR SPATIAL RELATIONSHIPS.

45. BRANCH CIRCUITS EXCEEDING 100 FT IN LENGTH SHALL BE WIRED WITH MINIMUM #10 AWG COPPER WIRES. CONTRACTOR SHALL VERIFY REQUIRED WIRE SIZE WITH VOLTAGE DROP CALCULATIONS.

46. OUTDOOR LIGHTING FIXTURES SHALL BE COPPER FREE ALUMINUM.

47. CONTRACTOR SHALL BALANCE PANELBOARD LOADS AT THE END OF THE PROJECT.

48. ALL METALLIC CONDUITS BELOW GRADE TO A MINIMUM ELEVATION OF 12 INCHES ABOVE GRADE SHALL BE PVC COATED RIGID METAL CONDUIT (RMC).

49. ALL METALLIC CONDUITS 12 INCHES AND GREATER ABOVE GRADE SHALL BE RMC.

50. IF CONCRETE ENCASED DUCT BANKS INCLUDE POWER WITH ANY TYPE OF SIGNALS EXCEPT FIBER OPTIC CABLE, ALL CONDUITS SHALL BE METALLIC.

51. CONCRETE DUCT BANKS WITH POWER ONLY WIRING SHALL BE PVC UNLESS OTHERWISE NOTED ON THE DRAWINGS.

52. COPPER CONDUCTORS FOR POWER WIRING WITH A VOLTAGE GREATER THAN 240V TO GROUND SHALL BE XHHW-2. OTHER POWER WIRING SHALL BE EITHER XHHW OR THWN STRANDED COPPER WIRING.

53. ELECTRICAL EQUIPMENT SHALL BE DEFINED AS ANY ELECTRICAL DEVICE USED IN CONJUNCTION WITH OTHER EQUIPMENT REQUIRING ELECTRICITY FOR OPERATION. THIS INCLUDES BUT IS NOT LIMITED TO: DISCONNECT SWITCHES, JUNCTION BOXES, PANELBOARDS, TRANSFORMERS, LIGHTING FIXTURES, MOTOR STARTERS, SWITCHGEAR, MOTOR CONTROL CENTERS, CONTROLS, LOCAL CONTROL PANELS.

54. ALL REFERENCES TO STAINLESS STEEL OR SS SHALL MEAN TYPE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.

55. ALL JUNCTIONS BOXES, LOCAL CONTROL PANELS, DISCONNECT SWITCHES AND INSTALLATION HARDWARE INSTALLED OUTDOORS SHALL BE 316 STEEL.

56. ALL ELECTRICAL EQUIPMENT IN DESIGNATED CORROSIVE AREAS SHALL BE NEMA 4X 316 STAINLESS STEEL OR NON-METALLIC.

57. CONTRACTOR SHALL MAINTAIN EQUIPMENT WORKING CLEARANCES AS INDICATED IN NEC 2011, 110.26.

58. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED TO INDICATE POTENTIAL ELECTRIC ARC FLASH HAZARDS PER NEC 2008 110.16

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:08:56-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E02

Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ELECTRICAL NOTES

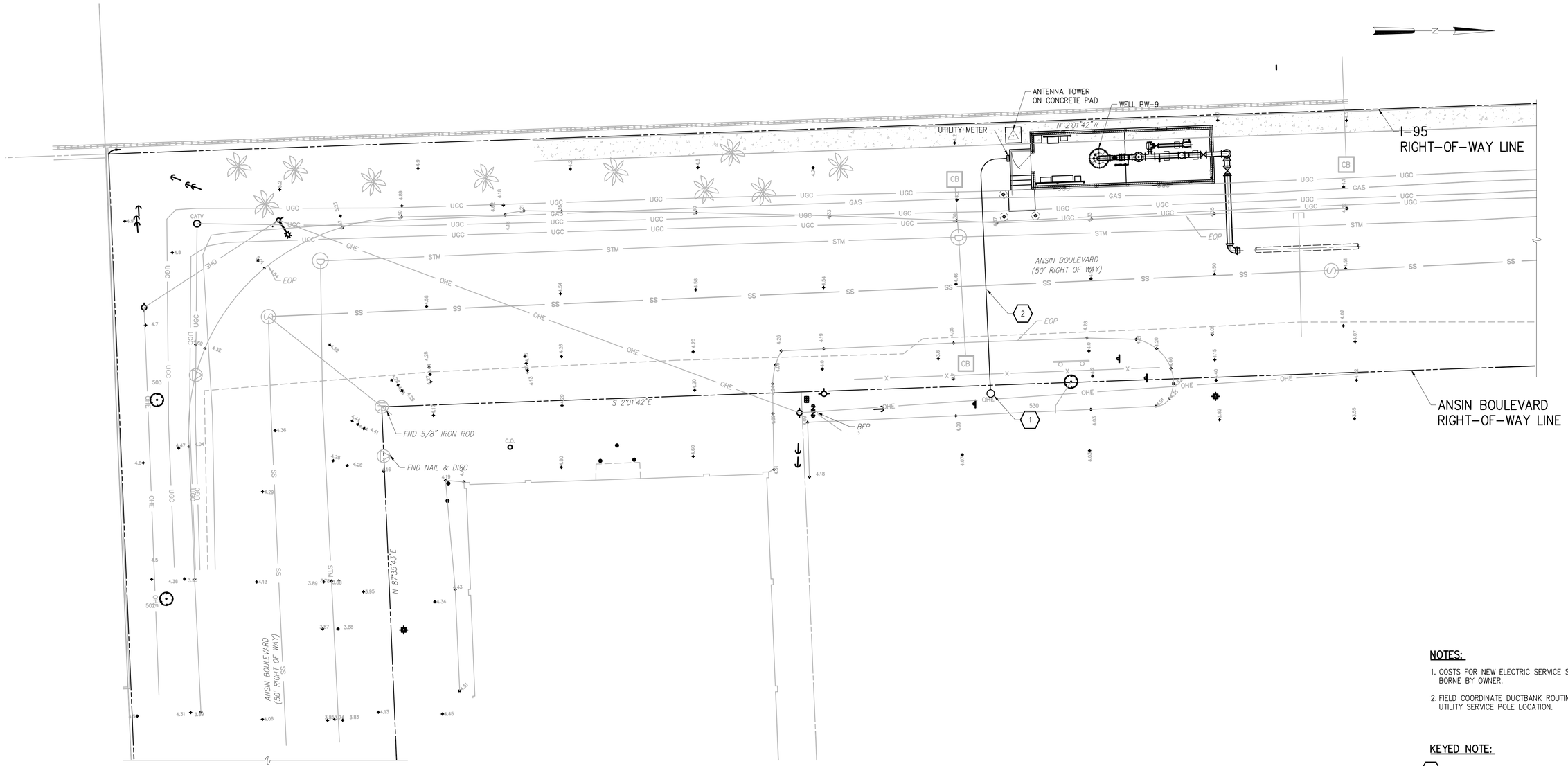
DATE: FEBRUARY 2020
SHEET: 30 OF 42
DRAWING: E-02

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E02 Saved by jbroad Save date = 8/8/2019 2:29 PM



NOTES:

1. COSTS FOR NEW ELECTRIC SERVICE SHALL BE BORNE BY OWNER.
2. FIELD COORDINATE DUCTBANK ROUTING WITH UTILITY SERVICE POLE LOCATION.

KEYED NOTE:

1. ESTIMATED LOCATION FOR NEW UTILITY SERVICE POLE.
2. 3"C, (SEE 1-LINE FOR SERVICE CONDUCTOR SIZES). BURY 24" BELOW FINSIHED GRADE, MIN. USE PVC-COATED STEEL CONDUIT.

1"=10'-0"

10 5 0 10'

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:00-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E03

Beach
Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

PROPOSED ELECTRICAL SITE PLAN

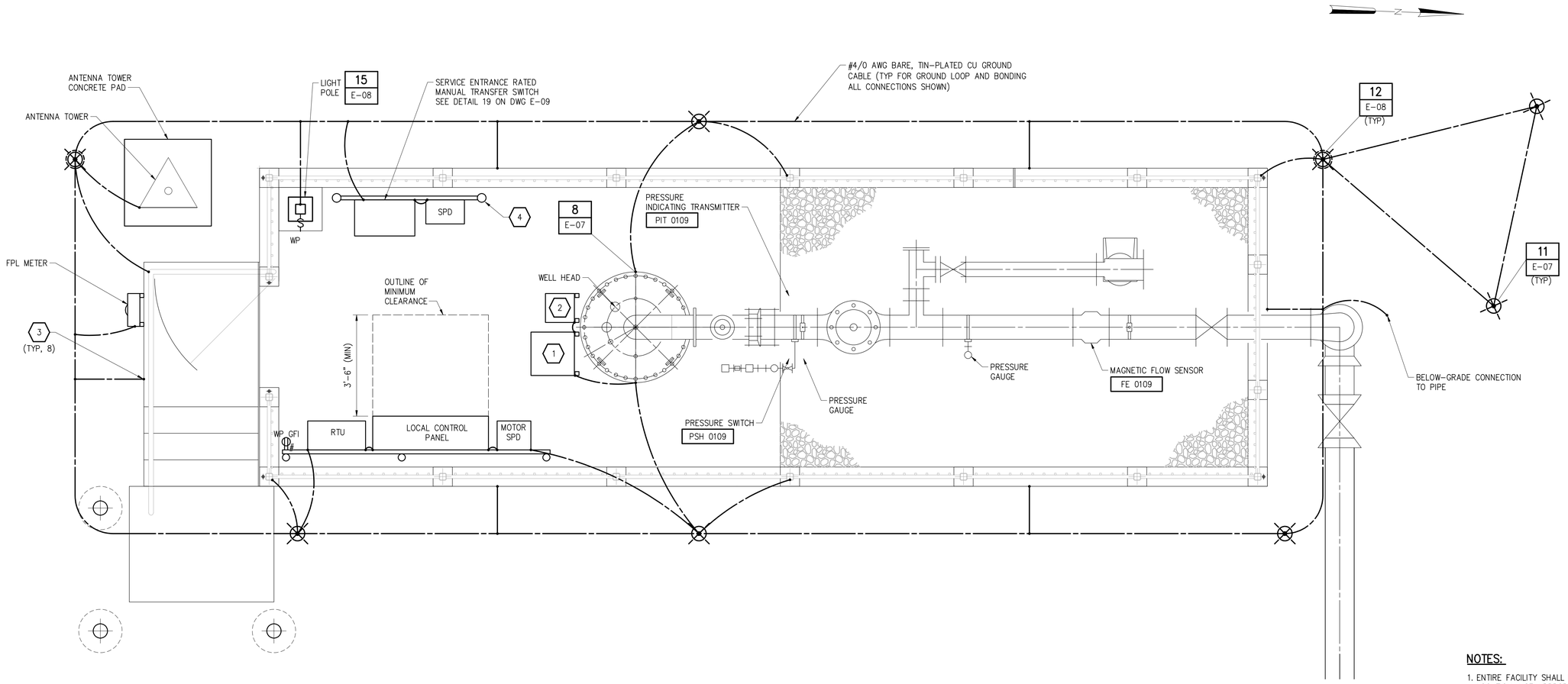
DATE : FEBRUARY 2020
SHEET : 31 OF 42
DRAWING : E-03

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-MP,..\dms49208\PW-PT-SP,..\dms49208\SP-ST-X,..\dms49208\PW-PT-EP,..\dms49208\PW-SF-SP

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E03 Saved by jbroad Save date = 8/9/2019 2:10 PM



FIXTURE SCHEDULE				
ID	DESCRIPTION	VOLTAGE	INST HARDWARE	MFG
A	LED TYPE SITE LIGHTING FOR STRUCTURE LIGHTING. PROVIDE WITH POLE-MOUNTED LIGHT SWITCH.	MVOLT	INSTALLATION HARDWARE AND ANCHORS SHALL BE STAINLESS STEEL	ACUITY BRANDS INC: FIXTURE: LITHONIA MODEL: DSXO LED 20C 530 40K T5W MVOLT RPA DDBXD

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:05-05'00'

NOTES:

1. ENTIRE FACILITY SHALL BE CONSIDERED A WET LOCATION. USE APPROPRIATE WIRING METHODS AND MATERIALS.
2. INSTALL GROUND LOOP 2'-6" BELOW GRADE, MIN.
3. ALL CONNECTIONS TO GROUND LOOP FROM EQUIPMENT ON SLAB SHALL BE ROUTED IN 1" PVC CONDUIT EMBEDDED IN SLAB. INSTALL CONDUIT FLUSH WITH SLAB.

KEYED NOTE:

1. POWER TERMINAL JUNCTION BOX
2. SIGNAL TERMINAL JUNCTION BOX
3. BOND LOWER-MOST REBAR IN FOUNDATION TO GROUND LOOP, AS SHOWN.
4. REFER TO DETAIL 16 ON DWG E-09 FOR RACK CONSTRUCTION DETAILS.

1/2"=1'-0" (12" 0 1 3')

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E04

Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

POWER, LIGHTING AND GROUNDING PLAN

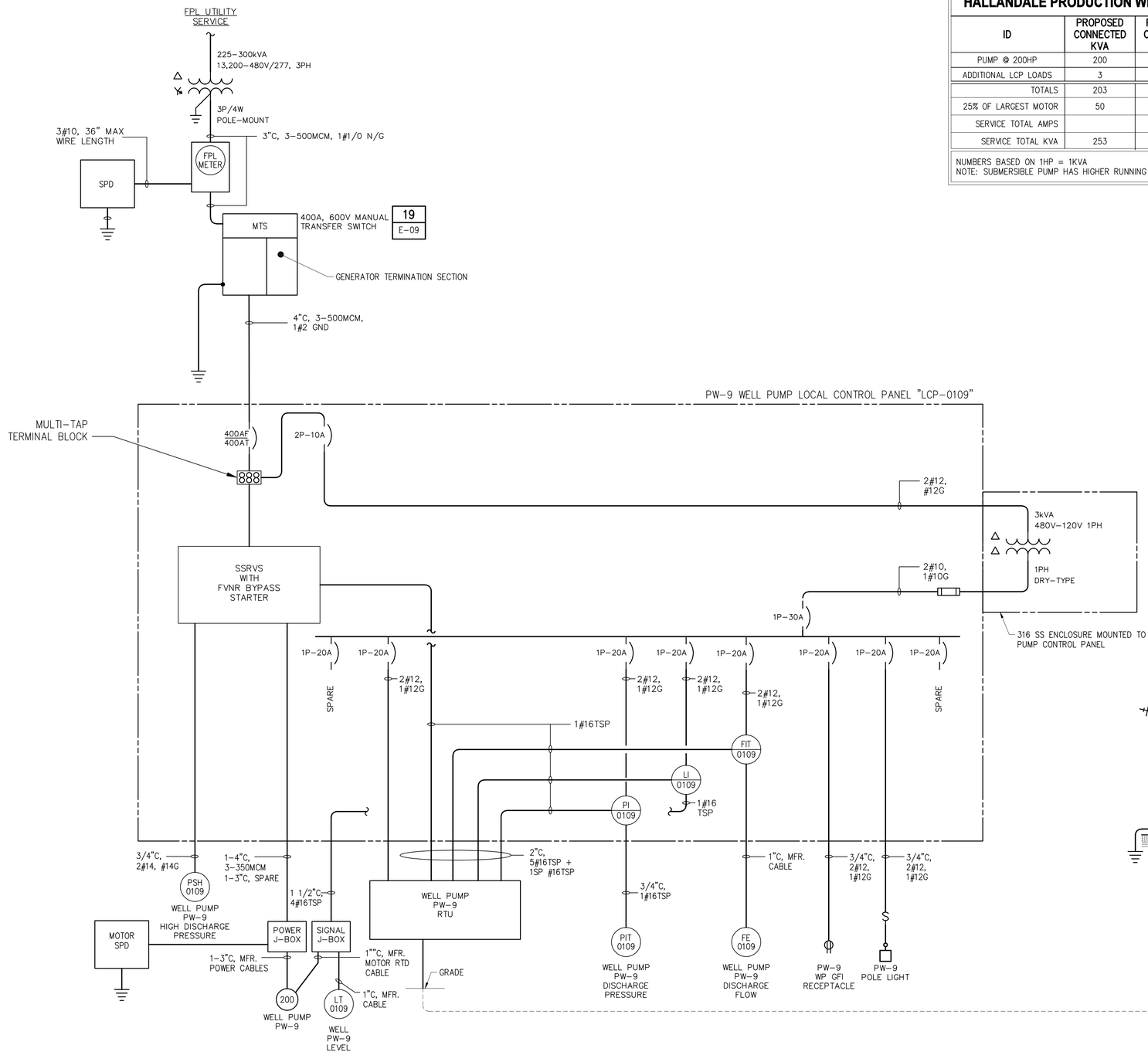
DATE : FEBRUARY 2020
SHEET : 32 OF 42
DRAWING : E-04

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB,..\dms49208\PW-PT-MP,..\dms49208\PW-PT-SP,..\dms49208\PW-PT-EP,..\dms49208\PW-SF-SP

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E04 Saved by jbroad Save date = 8/9/2019 2:10 PM



HALLANDALE PRODUCTION WELL NO. 9 ELECTRICAL LOADS

ID	PROPOSED CONNECTED KVA	PROPOSED CONNECTED AMPS	PROPOSED DEMAND KVA	PROPOSED DEMAND AMPS
PUMP @ 200HP	200	241	175	211
ADDITIONAL LCP LOADS	3	6	2	2
TOTALS	203	247	177	213
25% OF LARGEST MOTOR	50	60		
SERVICE TOTAL AMPS		307		213
SERVICE TOTAL KVA	253		177	

NUMBERS BASED ON 1HP = 1KVA
NOTE: SUBMERSIBLE PUMP HAS HIGHER RUNNING AMP LOAD

FAULT CURRENT CALCULATIONS

SOURCE	CALCULATION	UTILITY TRANSFORMER 300 KVA @ 5.36% IZ
UTILITY TRANSFORMER	$Isc = \frac{300}{1.73 \times 0.48 \times 0.0536}$	6735
MOTOR CONTRIBUTION	$Isc = \frac{160}{1.73 \times 0.48 \times 0.25}$	770
	TOTAL FAULT AMPS	**7,505**

NOTES:

1. THE PUMP POWER CABLE IS FURNISHED BY EQUIPMENT SUPPLIER WITH THE PUMP.
2. WELL PUMPS ARE SUBMERSIBLE TYPE PUMPS AND MOTORS HAVE A HIGHER FLA THAN STANDARD MOTORS.
3. CONTRACTOR SHALL VERIFY ACTUAL FLA OF MOTORS SUPPLIED AND ADJUST THE SSRVS, CIRCUIT BREAKERS, WIRING, AND CONDUIT ACCORDINGLY WITHOUT ANY ADDITIONAL COST TO OWNER.
4. COORDINATE VEHICLE–MOUNTED GENERATOR PLUG TYPE WITH CITY IN ORDER TO FURNISH MATCHING RECEPTACLE AT TRANSFER SWITCH.
5. FVNR SPARE STARTER SHALL BE NEMA SIZE 5. SSRV FULL LOAD RATING SHALL BE 240A, MIN.
6. SHORT CIRCUIT CURRENT RATING FOR PUMP CONTROL PANEL SHALL BE 22,000 AMPERES RMS SYMMETRICAL, MINIMUM.

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:10-05'00'

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE:40612–030BP4–E05

Beach Hallandale Beach PROGRESS, INNOVATION, OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

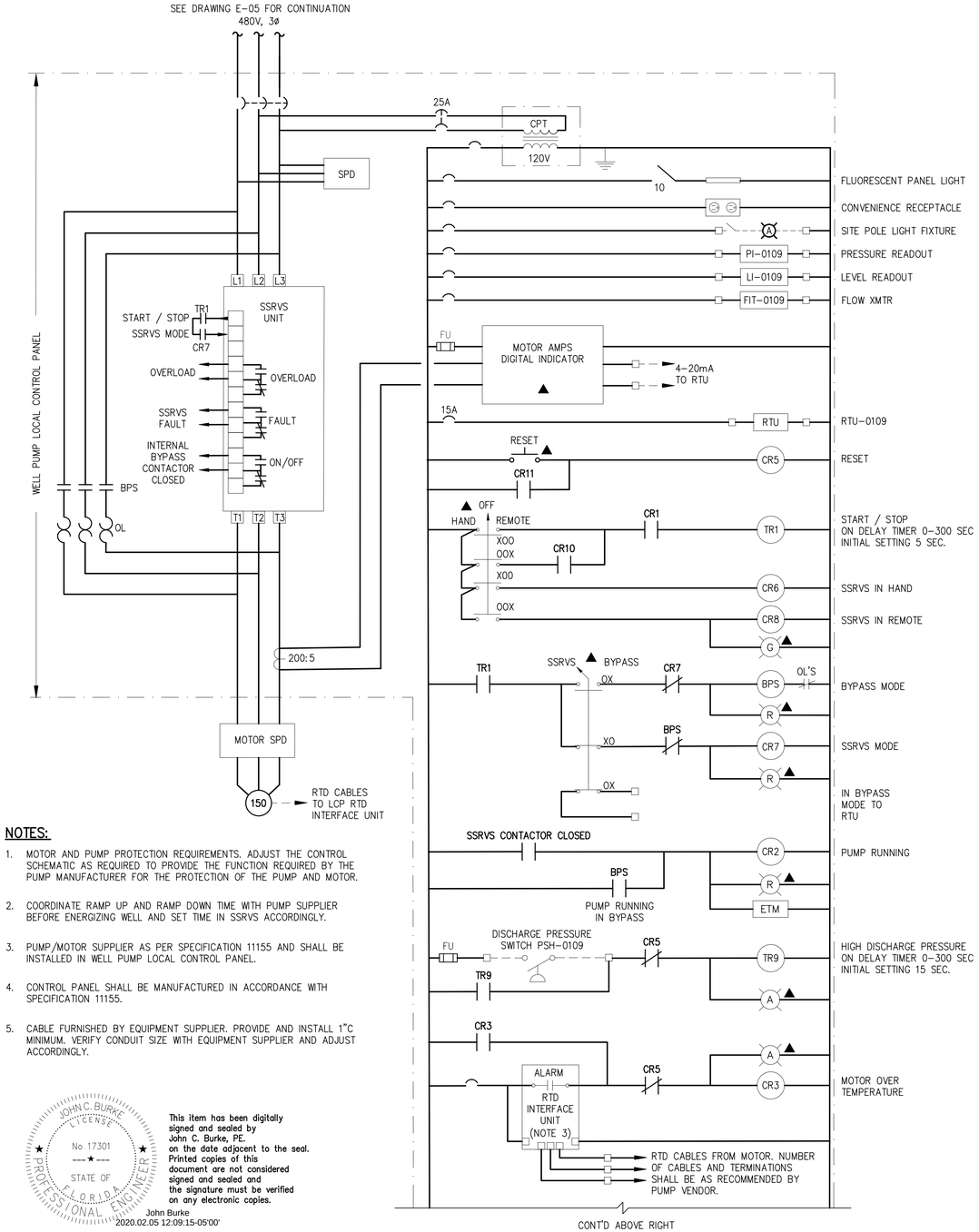
ONE–LINE DIAGRAM

DATE: FEBRUARY 2020
SHEET: 33 OF 42
DRAWING: E–05

BID SET

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49210\40612–030BP4–E05 Saved by jbroad Save date = 8/9/2019 2:10 PM



NOTES:

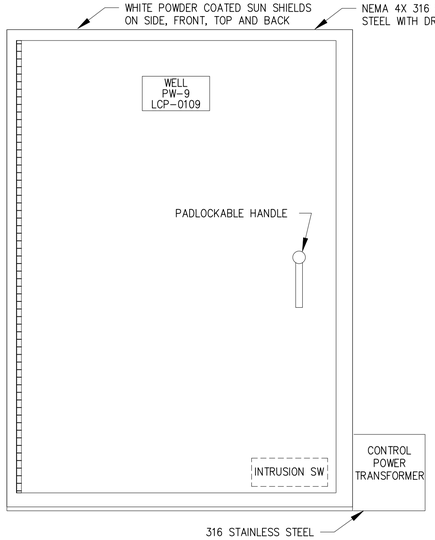
1. MOTOR AND PUMP PROTECTION REQUIREMENTS. ADJUST THE CONTROL SCHEMATIC AS REQUIRED TO PROVIDE THE FUNCTION REQUIRED BY THE PUMP MANUFACTURER FOR THE PROTECTION OF THE PUMP AND MOTOR.
2. COORDINATE RAMP UP AND RAMP DOWN TIME WITH PUMP SUPPLIER BEFORE ENERGIZING WELL AND SET TIME IN SSRVS ACCORDINGLY.
3. PUMP/MOTOR SUPPLIER AS PER SPECIFICATION 11155 AND SHALL BE INSTALLED IN WELL PUMP LOCAL CONTROL PANEL.
4. CONTROL PANEL SHALL BE MANUFACTURED IN ACCORDANCE WITH SPECIFICATION 11155.
5. CABLE FURNISHED BY EQUIPMENT SUPPLIER. PROVIDE AND INSTALL 1"C MINIMUM. VERIFY CONDUIT SIZE WITH EQUIPMENT SUPPLIER AND ADJUST ACCORDINGLY.

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

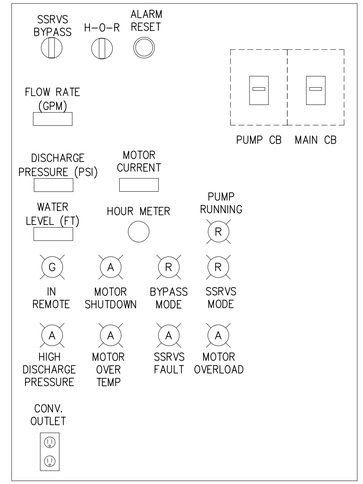
This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke 2020.02.05 12:09:15-05'00'

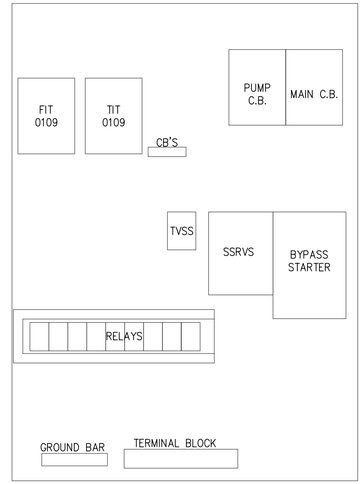
WELL PUMP LOCAL CONTROL PANEL LCP_PW9 SCHEMATIC



FRONT VIEW
N.T.S.



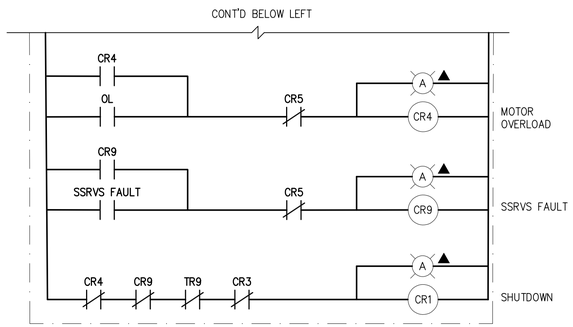
DEAD FRONT VIEW
N.T.S.

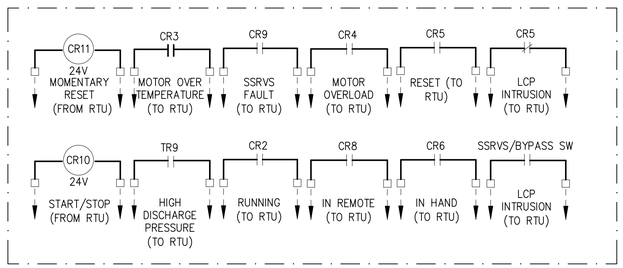


SUBPLATE VIEW
N.T.S.

WELL PUMP LOCAL CONTROL PANEL LCP-0109

LEGEND:
▲ MOUNT ON FRONT OF WELL PUMP CONTROL PANEL





WELL PUMP LOCAL CONTROL PANEL SIGNALS TO RTU

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: -
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E06

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
SCHEMATICS AND RISERS

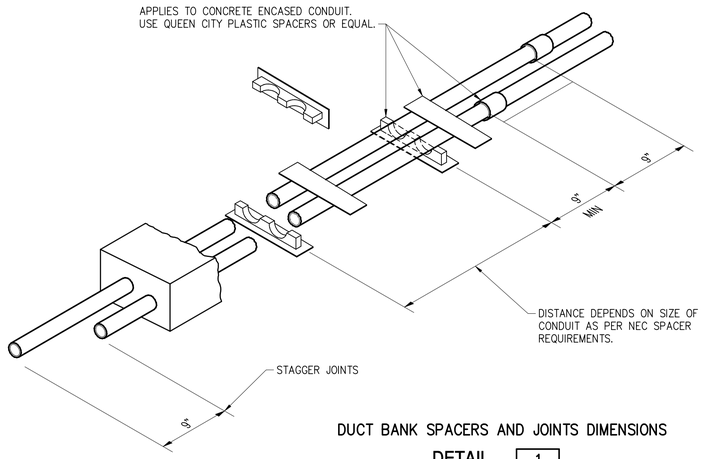
DATE: FEBRUARY 2020
SHEET: 34 OF 42
DRAWING: E-06

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

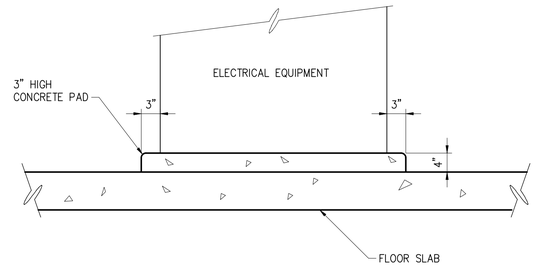
XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E06 Saved by jbroad Save date = 8/9/2019 1:59 PM



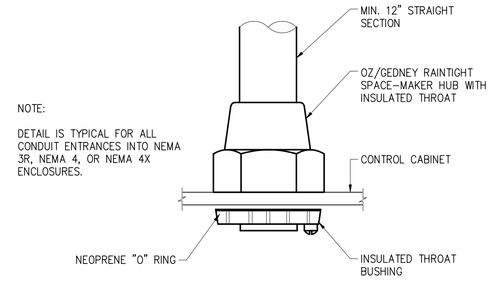
DUCT BANK SPACERS AND JOINTS DIMENSIONS

DETAIL 1
NTS –



EQUIPMENT HOUSEKEEPING PAD

DETAIL 2
NTS –



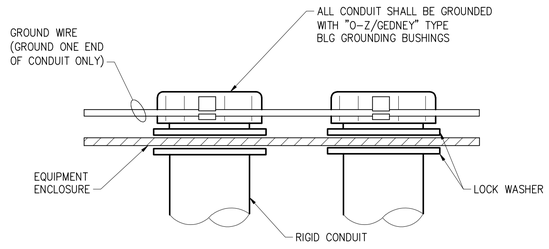
CONDUIT HUB

DETAIL 3
NTS –

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

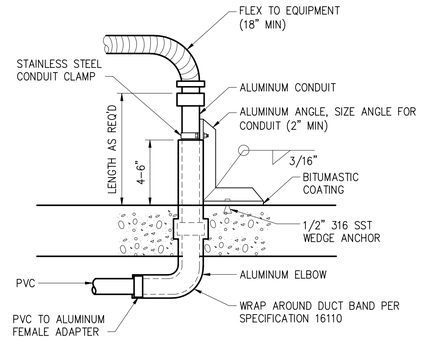
This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:20-05'00'



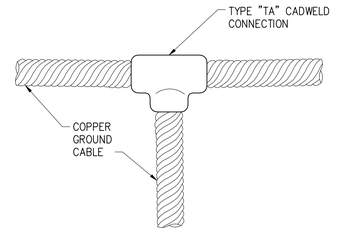
CONDUIT GROUNDING

DETAIL 4
NTS –



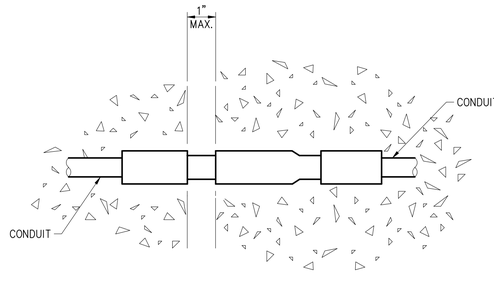
SLAB PENETRATIONS

DETAIL 5
NTS –



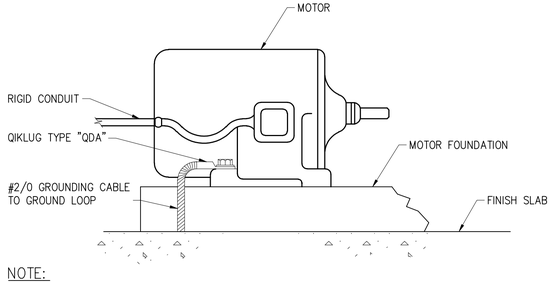
GROUND CABLE CONNECTION

DETAIL 6
NTS –



EXPANSION COUPLING

DETAIL 7
NTS –

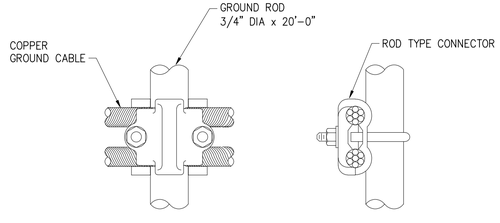


NOTE:

THIS GROUND IS IN ADDITION TO THE GROUND FROM THE MAIN ELECTRICAL SERVICE.

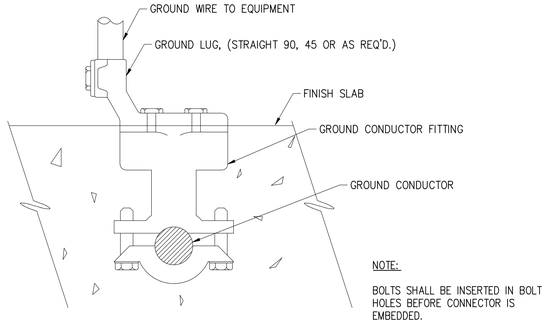
EQUIPMENT GROUNDING

DETAIL 8
NTS –



CABLE TO ROD CONNECTION

DETAIL 9
NTS –

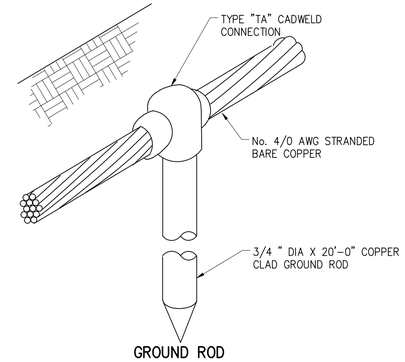


NOTE:

BOLTS SHALL BE INSERTED IN BOLT HOLES BEFORE CONNECTOR IS EMBEDDED.

GROUNDING INSERT

DETAIL 10
NTS –



GROUND ROD

DETAIL 11
NTS –

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E07

Beach
Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ELECTRICAL DETAILS – SHEET 1

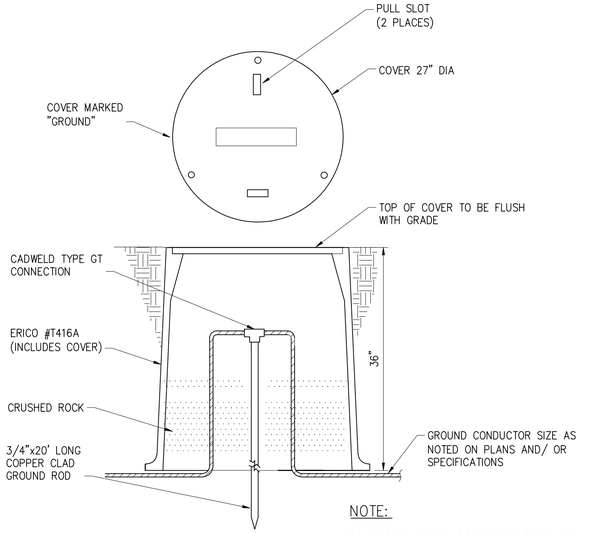
DATE: FEBRUARY 2020
SHEET: 35 OF 42
DRAWING: E-07

BID SET

PLOT DATE: 2/5/2020 9:11 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E07 Saved by jbroad Save date = 8/9/2019 1:59 PM

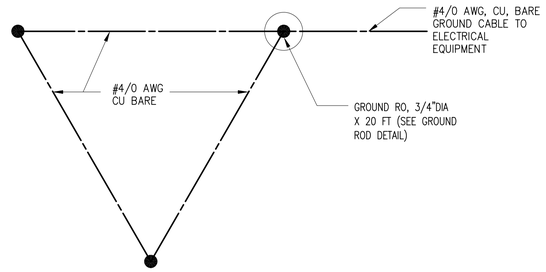


NOTE:

TO IMPROVE SYSTEM RESISTANCE, ERICO GEM MAY BE USED AS A BACKFILL MATERIAL IN AN AUGERED HOLE.

GROUND ROD INSPECTION HOUSING

DETAIL	12
NTS	–

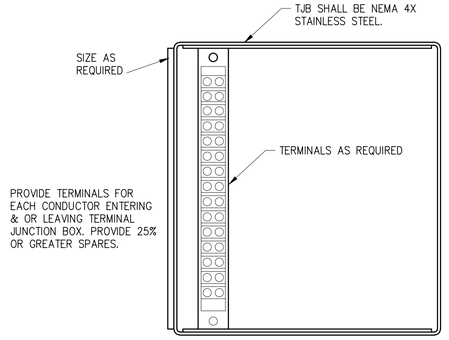


NOTE:

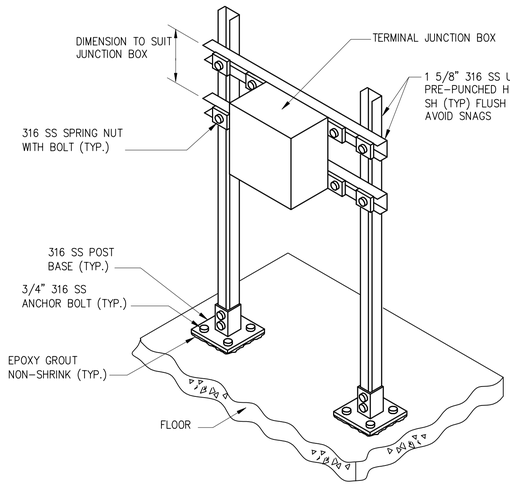
GROUNDING DELTA SHALL BE AN EQUILATERAL TRIANGLE WITH 10' SIDES MINIMUM.

GROUNDING DELTA LAYOUT

DETAIL	13
NTS	–



PROVIDE TERMINALS FOR EACH CONDUCTOR ENTERING & OR LEAVING TERMINAL JUNCTION BOX. PROVIDE 25% OR GREATER SPARES.

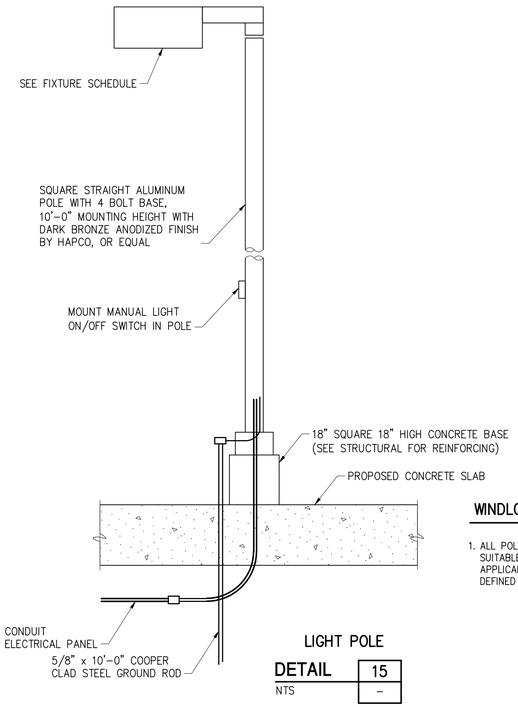


NOTES:

1. TJB UNISTRUT MINIMUM HEIGHT SHALL BE 18' ABOVE FINISHED FLOOR.
2. ALL CONDUITS SHALL ENTER THE TERMINAL JUNCTION BOX FROM THE SIDE AND EXIT FROM THE BOTTOM. TOP ENTRY IS NOT ACCEPTABLE.

TERMINAL JUNCTION BOX (TJB)

DETAIL	14
NTS	–



WINDLOADING NOTE:

1. ALL POLE INSTALLATIONS SHALL BE SUITABLE FOR FOR WIND LOADING PER APPLICABLE ZONE OF INSTALLATION AS DEFINED IN THE FLORIDA BUILDING CODE

LIGHT POLE

DETAIL	15
NTS	–

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:25-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E08

Hallandale Beach PROGRESS, INNOVATION, OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ELECTRICAL DETAILS – SHEET 2

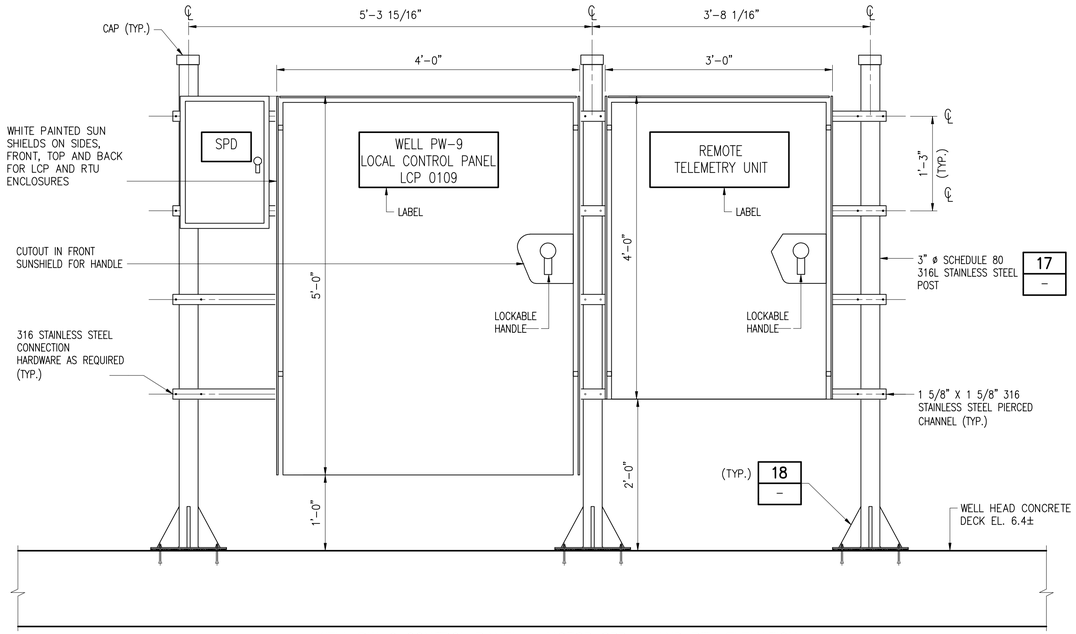
DATE: FEBRUARY 2020
SHEET: 36 OF 42
DRAWING: E-08

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

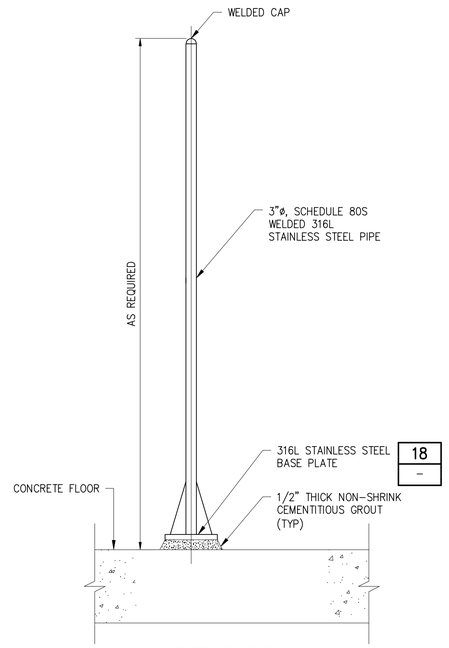
XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E08 Saved by jbroad Save date = 8/9/2019 1:59 PM



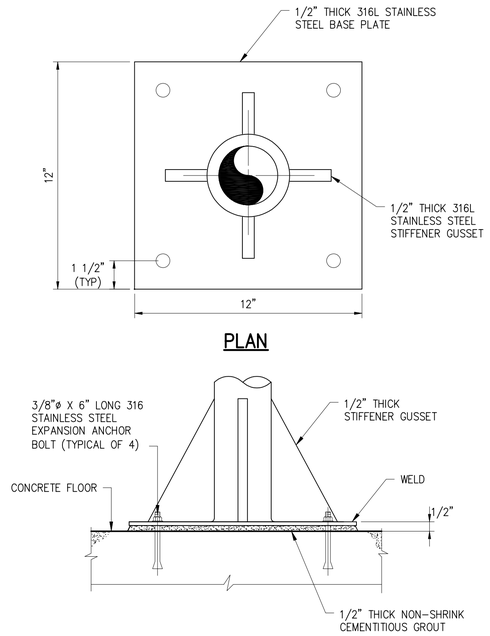
WELL PW-9 CONTROL PANEL – MOTOR SPD – AND RTU ELEVATION

DETAIL 16
1" = 1'-0" –



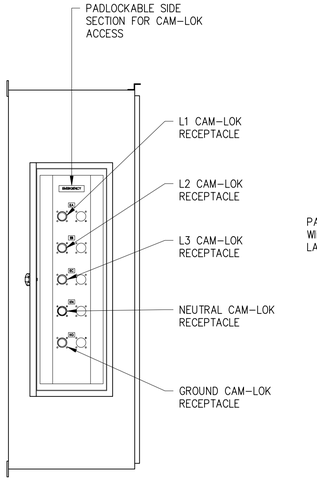
SUPPORT POST

DETAIL 17
NTSA –

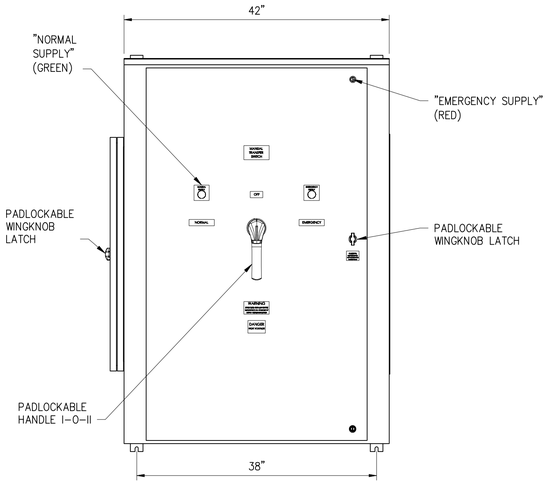


BASE PLATE

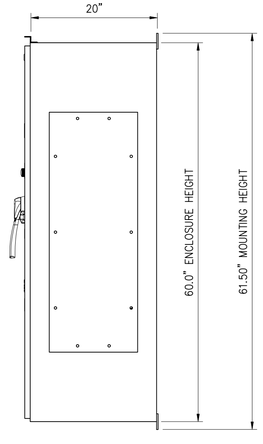
DETAIL 18
NTS –



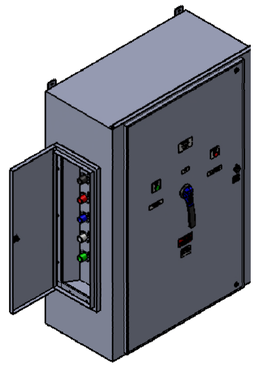
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



DIMETRIC VIEW

400A FUSIBLE, 4-POLE, NEMA 3R MANUAL TRANSFER SWITCH

DETAIL 19
NTS E-09

SPECIFICATIONS:

MAX VOLTAGE – 600VAC 3 Ø
RATED CURRENT – 400 A
STANDARDS – UL508A
ENCLOSURE RATING – NEMA 3R, 304 SS
REF. ES100145BF
DURABILITY – 6050 CYCLES
COLOR – WHITE POWDER COATED
EST SHIPPING WEIGHT – 450LBS

MODEL
STS400N3RBF4CL
BY PSI CONTROL SOLUTIONS

NOTES:

1. MANUAL TRANSFER SWITCH SHALL BE SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT.
2. SHORT CIRCUIT CURRENT RATING SHALL BE 22,000 AMPERES RMS SYMMETRICAL, MINIMUM.
3. MANUFACTURER SHALL COORDINATE FUSE SIZING AND TYPES, AS REQUIRED.
4. CONTRACTOR SHALL PROVIDE CLEAR ACCESS TO TRANSFER SWITCH GENERATOR TERMINATIONS.

JOHN C. BURKE LICENSE No 17301 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by John C. Burke, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Burke
2020.02.05 12:09:30-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED JMB
DRAWN JMB
CHECKED JCB
PROJ. ENGR. JCB

JOHN C. BURKE P.E.
No. 17301

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE:40612-030BP4-E09

Beach
Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

ELECTRICAL DETAILS – SHEET 3

DATE: FEBRUARY 2020
SHEET: 37 OF 42
DRAWING: E-09

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49210\40612-030BP4-E09 Saved by tbocas Save date = 1/22/2020 3:22 PM

INSTRUMENT AND FUNCTION SYMBOLS

LOCATION AND ACCESSIBILITY	SHARED DISPLAY/SHARED CONTROL: PRIMARY CHOICE OR BASIC PROCESS CONTROL SYSTEM	SHARED DISPLAY/SHARED CONTROL: ALTERNATE CHOICE OR SAFETY INSTRUMENTED SYSTEM	COMPUTER SYSTEMS AND SOFTWARE	DISCRETE
– LOCATED IN FIELD – NOT PANEL, CABINET, OR CONSOLE MOUNTED – VISIBLE AT FIELD LOCATION – NORMALLY OPERATOR ACCESSIBLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
– LOCATED IN OR ON FRONT OF CENTRAL OR MAIN PANEL OR CONSOLE – VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY – NORMALLY OPERATOR ACCESSIBLE AT PANEL FRONT OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
– LOCATED IN REAR OF CENTRAL OR MAIN PANEL – LOCATED IN CABINET BEHIND PANEL – NOT VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY – NOT NORMALLY OPERATOR ACCESSIBLE AT PANEL OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
– LOCATED IN OR ON FRONT OF SECONDARY OR LOCAL PANEL OR CONSOLE – VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY – NORMALLY OPERATOR ACCESSIBLE AT PANEL FRONT OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
– LOCATED IN REAR OF SECONDARY OR LOCAL PANEL – LOCATED IN FIELD CABINET – NOT NORMALLY OPERATOR ACCESSIBLE AT PANEL OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345

X — SUFFIX (X) TO DIFFERENTIATE BETWEEN INSTRUMENTS AND FUNCTIONS THAT WOULD OTHERWISE HAVE THE SAME IDENTIFICATION.

SINGLE INSTRUMENT OR OTHER COMPONENT HAVING MULTIPLE FUNCTIONS OR SHARING A COMMON HOUSING

(ZZZ) — DESIGNATIONS OF CONTROL FUNCTIONS (ZZZ) ASSOCIATED WITH INSTRUMENT OR OTHER COMPONENTS.

AHC	–	AUTO/HOLD/CLOSE	OSC	–	OPEN/STOP/CLOSED
AM	–	AUTO/MANUAL	POT	–	POTENTIOMETER
CALC	–	CALCULATION	RL	–	RAISE/LOWER
DEV	–	DEVIATION	RS	–	RUN/STOP
MOA	–	MANUAL/OFF/AUTO	RSL	–	RAISE/STOP/LOWER
HOR	–	HAND/OFF/REMOTE	SD	–	SHUTDOWN
LOS	–	LOCKOUT STOP	SEL	–	SELECT
LR	–	LOCAL/REMOTE	SP	–	SET POINT
LSR	–	LOCAL/STOP/REMOTE	SR	–	START/RESET
00	–	ON / OFF	SS	–	STOP/START
OC	–	OPEN/CLOSE			

ABCD 12345 — INSTRUMENT WITH COMPUTING OR CONVERTING FUNCTION

ABCD 12345 — CONTROL SYSTEM COMPUTING FUNCTION

CONVERT

E – VOLTAGE
I – CURRENT
P – PNEUMATIC
A – ANALOG
B – BINARY
H – HYDRAULIC
O – ELECTROMAGNETIC, SONIC
R – RESISTANCE (ELECT.)
D – DIGITAL

COMPUTE

SUMMING; SUBTRACTOR; MULTIPLYING; DIVIDING; ROOT EXTRACTION; PROPORTIONAL; DERIVATIVE; AVERAGING; RATIO; PID; DIFFERENCE; HIGH SELECTING; LOW SELECTING; INTEGRAL; COMPLEX FUNCTION

= 1, 2, 3, etc.
REFER TO NOTE ON SAME SHEET FOR BRIEF DESCRIPTION

ELECTRICAL CONTROL INTERLOCK

COMPLEX INTERLOCK
= 1, 2, 3, etc.
REFER TO NOTE ON SAME SHEET FOR BRIEF DESCRIPTION

AND — AND LOGIC

OR — OR LOGIC

ABCD 1234 — PILOT LIGHT

VALVE, GATE, AND ACTUATOR SYMBOLS

GATE VALVE
PLUG VALVE
GLOBE VALVE
BALL VALVE
BUTTERFLY VALVE
BALL CHECK VALVE
CHECK VALVE
3–WAY VALVE
3–WAY BALL VALVE
DIAPHRAGM VALVE
PINCH VALVE
NEEDLE VALVE
SLUICE GATE
STOP/SLIDE GATE
S — SOLENOID ACTUATOR
P — PNEUMATIC ACTUATOR

BACKFLOW PREVENTER
PRESSURE RELIEF VALVE
VACUUM RELIEF VALVE
COMBINATION VACUUM AND PRESSURE RELIEF VALVE
PRESSURE–REDUCING REGULATOR
BACKPRESSURE REGULATOR
V — AIR RELEASE VALVE
M — ROTARY MOTOR
E/H — ELECTROHYDRAULIC ACTUATOR
MANUAL ACTUATOR

PUMP AND EQUIPMENT SYMBOLS

CENTRIFUGAL WET PIT PUMP (OR DRY–PIT SUBMERSIBLE)
BLOWER (CENTRIFUGAL)
GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
SCREW PUMP
PISTON PUMP
DIAPHRAGM PUMP
ROTARY LOBE PUMP OR BLOWER (POSITIVE DISPLACEMENT)
METERING PUMP
COMPRESSOR
PROGRESSIVE CAVITY PUMP
VERTICAL PUMP
INLINE GRINDER
CENTRIFUGAL PUMP
MIXER

IDENTIFICATION LETTERS

	FIRST LETTERS: MEASURED OR INITIATING VARIABLE	FIRST LETTERS: VARIABLE MODIFIER	SUCCEEDING LETTERS: READOUT/ PASSIVE FUNCTION	SUCCEEDING LETTERS: OUTPUT/ ACTIVE FUNCTION	SUCCEEDING LETTERS: FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE (EMF)		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL PROBE		
X	UNCLASSIFIED	X–AXIS	ACCESSORY DEVICES, UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y–AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z–AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

MISCELLANEOUS SYMBOLS

QUICK CONNECT
BLIND FLANGE
FLEXIBLE HOSE
CALIBRATION CYLINDER
PULSATION DAMPENER
EXPANSION TANK
HORN
HORN/STROBE
RUPTURE DISK
V — VENT
DIAPHRAGM SEAL
FULL LINE OR TAPPED RING SEAL
D — DRAIN
XXXX–YYYY — EQUIPMENT OR PANEL TAG
M — MOTOR
FILTER
AIR FILTER
STATIC MIXER
INJECTOR

PRIMARY ELEMENT SYMBOLS

M — MAGNETIC FLOW METER
SONIC FLOW METER
M — THERMAL MASS FLOW METER
TURBINE OR PROPELLER FLOW METER
VENTURI FLOW METER
AVERAGING PITOT TUBE
PADDLE WHEEL FLOW METER
VORTEX FLOW METER
POSITIVE DISPLACEMENT FLOW METER

PARSHALL FLUME
WEIR
ORIFICE PLATE
FICV — ROTAMETER WITH INTEGRAL VALVE
ABCD 1234 TT — TT:
RF=ADMITTANCE/CAPACITANCE
MAN=MANOMETER
ULTRASONIC LEVEL SENSOR
SUBMERSIBLE LEVEL SENSOR
NON–CONTACT RADAR LEVEL SENSOR
GUIDED WAVE RADAR LEVEL SENSOR

FLOAT LEVEL SWITCH
CAPACITANCE LEVEL SENSOR

KEITH R. DINNEN LICENSE No. 78757 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Keith R. Dinnen, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Keith R. Dinnen
2020.02.05 14:11:55-05'00'

ANALYTICAL ABBREVIATIONS

AXX 12345 (ZZZ) — ANALYSIS INSTRUMENT

(ZZZ) =
ALK – ALKALINITY
CH4 – METHANE
CL2 – CHLORINE
COMB – COMBUSTIBLE GAS
CON – CONDUCTIVITY
DO – DISSOLVED OXYGEN
IR – INFRARED
H2S – HYDROGEN SULFIDE
LEL – LOWER EXPLOSIVE LIMIT
METH – METHANOL VAPOR
NH3 – AMMONIA
NO3 – NITRATE
O2 – OXYGEN
O3 – OZONE
ORP – OXIDATION/REDUCTION POTENTIAL
PETRO – PETROLEUM VAPOR
PH – HYDROGEN ION CONCENTRATION
PO4 – PHOSPHATE
SO2 – SULFUR DIOXIDE
TH – TOTAL HARDNESS
TSS – TOTAL SUSPENDED SOLIDS
TURB – TURBIDITY
UV – ULTRAVIOLET

GENERAL NOTES

1. SYMBOLS AND NOMENCLATURE ARE BASED ON ANSI/ISA–5.1–2009.
2. REFER TO LEGEND SHEETS OF OTHER DISCIPLINES FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL ON CONTROL SYSTEM FUNCTIONAL REQUIREMENTS.
4. INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES. REFER TO THE DRAWINGS AND SPECIFICATIONS OF OTHER DISCIPLINES FOR ADDITIONAL DETAIL.
5. POWER SUPPLIES FOR LOOPS OR SYSTEMS SHALL BE FURNISHED BY THE INSTRUMENTATION SUPPLIER TO MEET THE PARTICULAR CHARACTERISTICS (E.G., VOLTAGE AND CURRENT REQUIREMENTS) OF COMPONENTS IN EACH LOOP OR SYSTEM.

LINE SYMBOLS AND LEGEND

MAJOR PROCESS PIPES OR CHANNELS
SECONDARY PROCESS OR MECHANICAL CONNECTION
AIR SUPPLY OR SIGNAL
ELECTRICAL SIGNAL/ COPPER CABLE
DATA LINK OR INTERNAL SOFTWARE LINK
FIBER OPTIC CABLE
DEVICENET CABLE

PROCESS/SIGNALS NOT CONNECTED (CROSSING)
PROCESS/SIGNALS CONNECTED
TAG / DRAWING — OFF–SHEET CONNECTOR
DISCRETE ELECTRICAL SIGNALS
DISCRETE DIGITAL SIGNALS
ANALOG ELECTRICAL SIGNALS
ANALOG DIGITAL SIGNALS

NO.	DATE	ISSUED FOR	BY
1.	01/21/2020	BID SET	GAB

DESIGNED E.P.C.
DRAWN L.M.S.
CHECKED G.A.B.
PROJ. ENGR. G.A.B.

KEITH R. DINNEN P.E.
No. 78757

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612–030
CAD REFERENCE: 40612–030BP4–I01

Hallandale Beach — PROGRESS. INNOVATION. OPPORTUNITY.
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW–9

SYMBOLS AND LEGEND

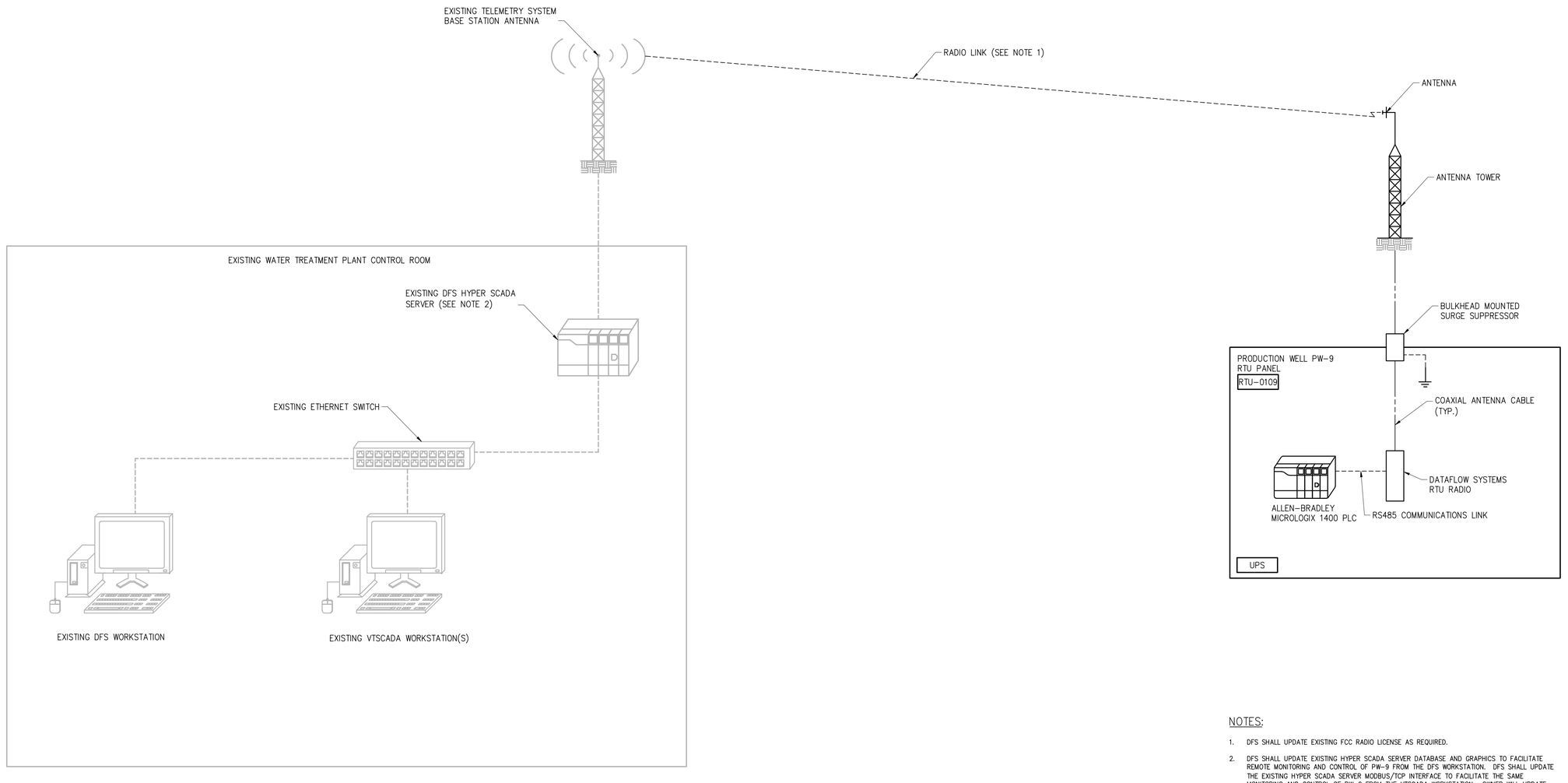
DATE: FEBRUARY 2020
SHEET: 38 OF 42
DRAWING: I–01

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

XREFs= ..\dms49216\40612–030–BP4TB

File = C:\bms\hazen–pw\dms49212\40612–030BP4–I01 Saved by tbocas Save date = 12/12/2019 10:06 AM



NOTES:

1. DFS SHALL UPDATE EXISTING FCC RADIO LICENSE AS REQUIRED.
2. DFS SHALL UPDATE EXISTING HYPER SCADA SERVER DATABASE AND GRAPHICS TO FACILITATE REMOTE MONITORING AND CONTROL OF PW-9 FROM THE DFS WORKSTATION. DFS SHALL UPDATE THE EXISTING HYPER SCADA SERVER MODBUS/TCP INTERFACE TO FACILITATE THE SAME MONITORING AND CONTROL OF PW-9 FROM THE VTSCADA WORKSTATION. OWNER WILL UPDATE THE VTSCADA WORKSTATION DATABASE AND GRAPHICS.

KEITH R. DINNEN LICENSE No. 78757 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Keith R. Dinnen, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Keith R. Dinnen
2020.02.05 14:12:43-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED E.P.C.
DRAWN L.M.S.
CHECKED G.A.B.
PROJ. ENGR. G.A.B.

KEITH R. DINNEN P.E.
No. 78757

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-I02

Beach Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY.

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

SYSTEM BLOCK DIAGRAM

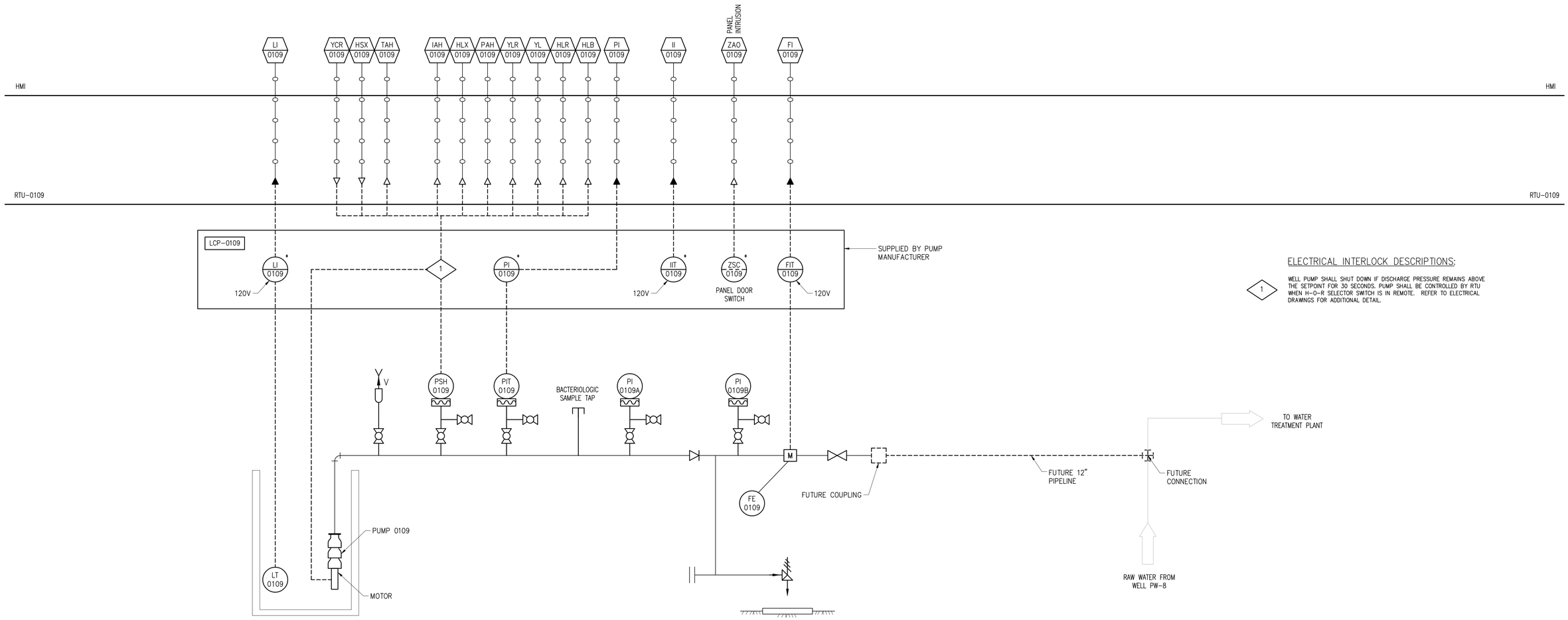
DATE: FEBRUARY 2020
SHEET: 39 OF 42
DRAWING: I-02

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\pms\hazen-pw\dms49212\40612-030BP4-I02 Saved by kdinnen Save date = 10/1/2019 11:40 AM



ELECTRICAL INTERLOCK DESCRIPTIONS:

1 — WELL PUMP SHALL SHUT DOWN IF DISCHARGE PRESSURE REMAINS ABOVE THE SETPOINT FOR 30 SECONDS. PUMP SHALL BE CONTROLLED BY RTU WHEN H-O-R SELECTOR SWITCH IS IN REMOTE. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL DETAIL.

LEGEND:

EXISTING

PROPOSED

KEITH R. DINNEN LICENSE No. 78757 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Keith R. Dinnen, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Keith R. Dinnen
2020.02.05 14:12:49-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED E.P.C.
DRAWN L.M.S.
CHECKED G.A.B.
PROJ. ENGR. G.A.B.

KEITH R. DINNEN P.E.
No. 78757

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-I03

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

WELL PW-9

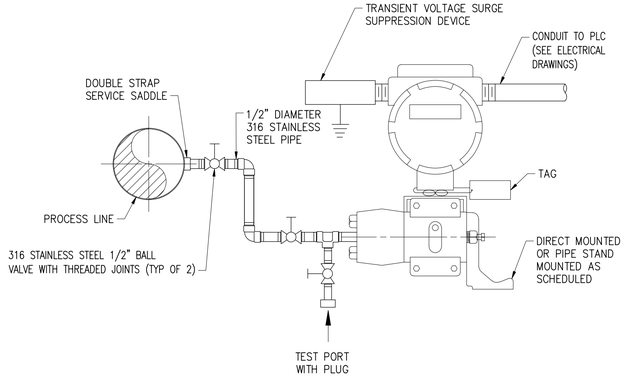
DATE: FEBRUARY 2020
SHEET: 40 OF 42
DRAWING: I-03

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

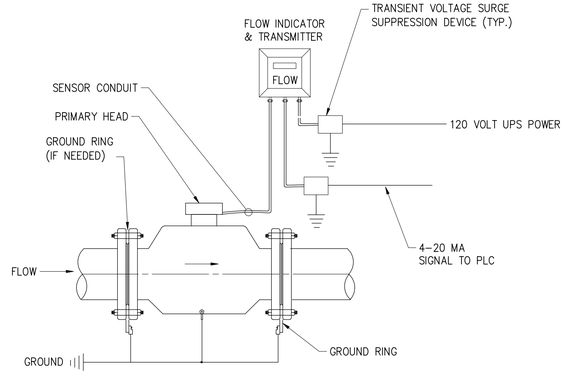
XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bma\hazen-pw\dms49212\40612-030BP4-I03 Saved by kdinnen Save date = 9/16/2019 4:53 PM



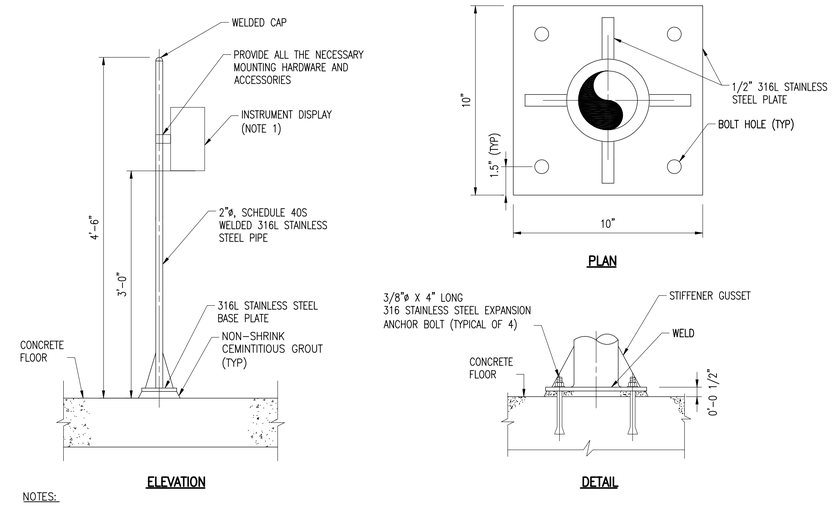
PRESSURE TRANSMITTER (REMOTE MOUNTED)

NTS



MAGNETIC FLOW METER

NTS

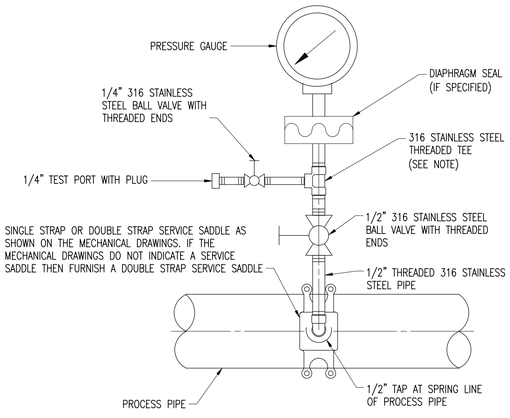


NOTES:

1. PROVIDE SUNSHIELD FOR OUTDOOR SERVICE

PIPE STAND TRANSMITTER MOUNT

NTS

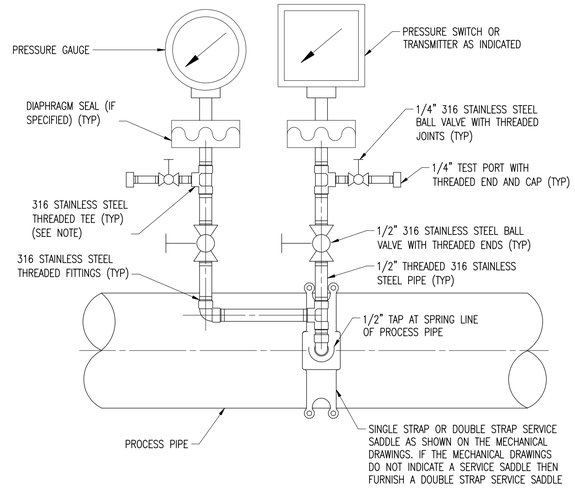


PRESSURE GAUGE INSTRUMENT OR SWITCH

NTS

NOTES:

1. IF A DIAPHRAGM SEAL IS REQUIRED, INSTALL THE TEST PORT AND VALVE ON THE SEAL'S FLUSHING CONNECTION INSTEAD OF TEE.
2. PROVIDE ISOLATING RING SEALS WHERE INDICATED ON THE MECHANICAL DRAWINGS.

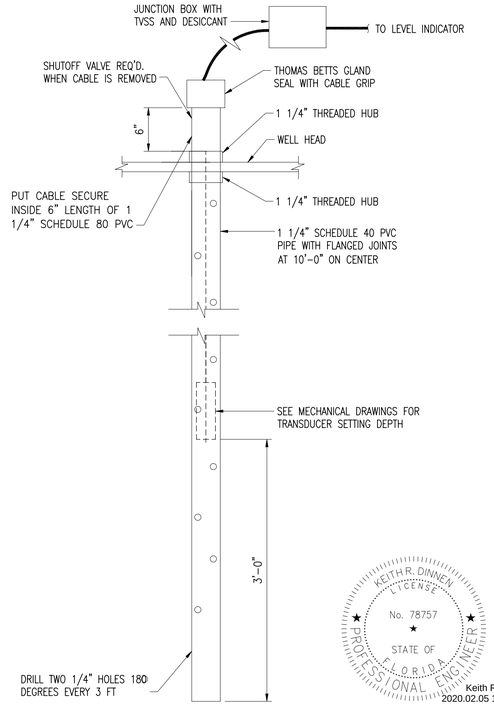


PRESSURE SWITCH AND GAUGE DETAIL

NTS

NOTES:

1. IF A DIAPHRAGM SEAL IS REQUIRED, INSTALL THE TEST PORT AND VALVE ON THE SEAL'S FLUSHING CONNECTION INSTEAD OF TEE.
2. PROVIDE ISOLATING RING SEALS WHERE INDICATED ON THE MECHANICAL DRAWINGS.



RAW WATER LEVEL TRANSDUCER

NTS

KEITH R. DINNEN LICENSE No. 78757 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Keith R. Dinnen, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Keith R. Dinnen
2020.02.05 14:12:54-05'00'

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED E.P.C.
DRAWN L.M.S.
CHECKED G.A.B.
PROJ. ENGR. G.A.B.

KEITH R. DINNEN P.E.
No. 78757

Hazen

HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-I04

Hallandale Beach PROGRESS. INNOVATION. OPPORTUNITY

CITY OF HALLANDALE BEACH
UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9

DETAILS – SHEET 1

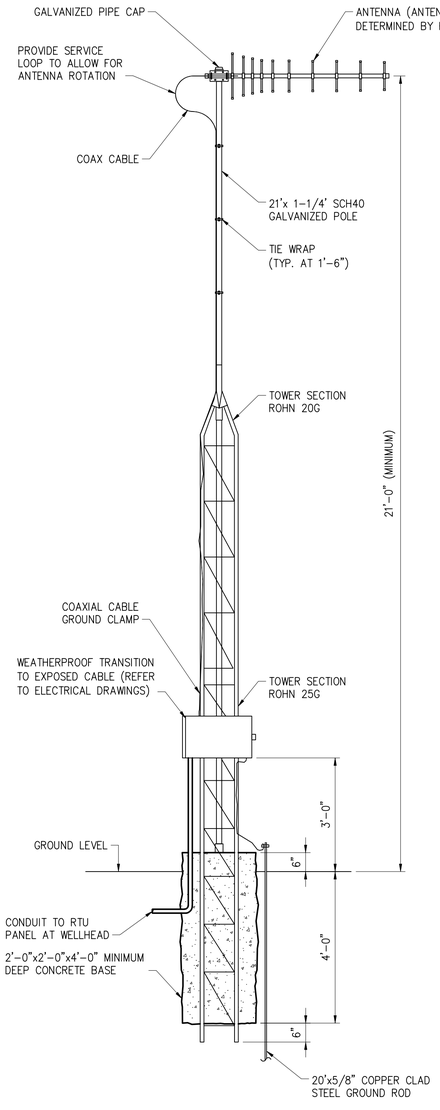
DATE: FEBRUARY 2020
SHEET: 41 OF 42
DRAWING: I-04

BID SET

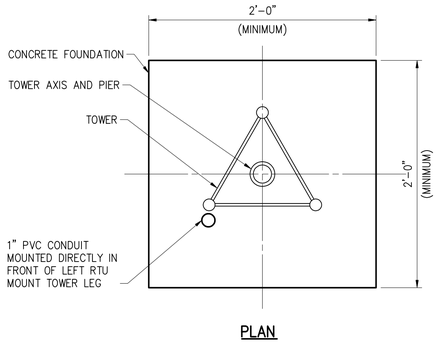
PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49212\40612-030BP4-I04 Saved by kdinnen Save date = 8/28/2019 5:02 PM



ELEVATION



PLAN

TOWER NOTES:

1. PERFORM RADIO SURVEY TO CONFIRM NEEDED TOWER HEIGHT. SUBMIT A COPY OF THE RADIO SURVEY TO THE ENGINEER PER THE REQUIREMENTS OF SECTION 01300.
2. TOWER SHALL BE DESIGNED BY THE TOWER MANUFACTURER. THIS DETAIL IS PRESENTED FOR CONCEPTUAL PURPOSES ONLY.
3. DESIGN PER ASCE 7 (LATEST EDITION)
4. DESIGN FOR WIND RATING AS REQUIRED BY THE FLORIDA BUILDING CODE FOR BROWARD COUNTY FLORIDA HIGH-VELOCITY HURRICANE ZONE (HVHZ) ACCORDING TO THE FOLLOWING FACTORS:
   - 4.1 ULTIMATE DESIGN WIND SPEED: 160 MPH
   - 4.2 RISK CATEGORY: I
   - 4.3 EXPOSURE: C
5. ANTENNA HEIGHT SHALL BE DETERMINED BY THE TOWER MANUFACTURER BASED ON FCC RULES AND THE RADIO SURVEY. THE HEIGHT OF THE TOWER SHALL BE ADJUSTED (AT NO COST TO THE OWNER) TO ENSURE SIGNAL STRENGTH RECOMMENDED BY RADIO SUPPLIER.
6. CONCRETE BASE SIZE SHALL BE DETERMINED BY THE TOWER MANUFACTURER AND BE ADJUSTED (AT NO COST TO THE OWNER) AS REQUIRED FOR THE FINAL ANTENNA TOWER HEIGHT.
7. MAST AND METAL STRUCTURE SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. SECTION 810-21.
8. ALL POLE INSTALLATIONS SHALL BE SUITABLE FOR WIND LOADING AND APPROPRIATE GUST FACTOR PER APPLICABLE ZONE OF INSTALLATION AS DEFINED IN THE FLORIDA BUILDING CODE. THE CONTRACTOR SHALL INCLUDE WITH THE SHOP DRAWING SUBMITTAL, A MAST WIND LOADING CALCULATION SIGNED & SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHOWING THAT THE PROPOSED MAST AND FOUNDATION WILL MEET THE GIVEN WIND LOADING REQUIREMENT.
9. MAST, ANTENNA AND CABLE SHALL BE SUPPLIED BY RTU SUPPLIER

KEITH R. DINNEN LICENSE No. 78757 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Keith R. Dinnen, PE. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Keith R. Dinnen
2020.02.05 14:13:22-05'00'

TOWER ASSEMBLY

DETAIL	1
NTS	–

NO.	DATE	ISSUED FOR	BY
1	01/21/2020	BID SET	GAB

DESIGNED E.P.C.
DRAWN L.M.S.
CHECKED G.A.B.
PROJ. ENGR. G.A.B.

KEITH R. DINNEN P.E.
No. 78757

Hazen
HAZEN AND SAWYER
4000 HOLLYWOOD BOULEVARD, SUITE 750N
HOLLYWOOD, FLORIDA 33021
CERTIFICATE OF AUTHORIZATION NO. : 2771

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

CLIENTS PROJECT: –
ENGINEERS PROJECT: 40612-030
CAD REFERENCE: 40612-030BP4-I05

Beach Hallandale Beach PROSPER. INNOVATION. OPPORTUNITY
CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT

CITY OF HALLANDALE BEACH UTILITIES DEPARTMENT
PRODUCTION WELL PW-9
DETAILS – SHEET 2

DATE: FEBRUARY 2020
SHEET: 42 OF 42
DRAWING: I-05

BID SET

PLOT DATE: 2/5/2020 9:12 AM BY: TBOCAS

XREFs= ..\dms49216\40612-030-BP4TB

File = C:\bms\hazen-pw\dms49212\40612-030BP4-I05.Saved by tbocas Save date = 12/12/2019 10:07 AM